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Contents for March 1954

How They Dry Hay at Hominy Hill	New Jersey Farm & Garden	1
What NOT To Do When You Drive a Tractor	Nebraska Farmer	4
Loose Housing Has Strong and Weak Points*	University of Wisconsin	6
How Grass Silage Cuts Costs	Journal of Farm Managers	7
Your Livestock Medicine Chest	Farmer & Stock-Breeder	11
Do Farmers Face Complete Control?	Hoard's Dairyman	13
200-Bushel-Per Acre Corn Yields	National Fertilizer Review	17
Lumps on Cattle Mean Grub Trouble*	Purdue University	20
What Is Your Grain-To-Milk Ratio?	American Agriculturist	21
How To Figure What Your Steers are Worth*	University of Wyoming	24
His Beef Costs Down 20% in Five Years	Farm Journal	25
201-lb. Hogs at 4 Months	Farm Journal	29
Hog Prices May Dip, But Mutton to Stay Up in '54*	Texas A & M College	30
Money Can Grow On Trees	The Farmer	31
Here's An All-Grass Rotation	The Ohio Farmer	35
New Methionine for Broilers	Poultry Tribune	37
You Can Lick These Alfalfa Pests	Capper's Farmer	39
15 Recommendations for Making Money with Hogs	Hog Breeder	43
Deep Plowing May be for You	Acco Press	45
How To Determine Protein Needed by Broilers*	U.S.D.A.	46
Balanced Farming Wins!	The Hereford Journal	47
Bloat Can Kill Your Cattle	Eastern States Cooperator	52
Bulk Handling of Milk Gained in 1953*	Ohio State University	54
Efficiency, Keynote of Modern Beef Production	American Hereford Journal	55
Milk Fever and Vitamin D	Ohio Farm & Home Research	60
Sheepmen Warned About Vitamin A Deficiency*	Virginia Extension	62
Economic Stability, No. 1 Farm Problem	Wisconsin Alumnus	63
Farm Marketing Takes More Work Than Production*	Ohio State University	67
Mushroom Farming	New England Homestead	68
TCA Won't Remain In Soil*	Wisconsin Extension	70
Sell The Farm Boy To Sell His Dad	Printer's Ink	71
4-H Building Program	National 4-H News	75
Tips For Beginning Farmers*	University of Minnesota	76
How Herd Management Influences Fat Yields	The Ayrshire Digest	77
New Sugar Fly Baits Show Great Promise*	New Mexico Extension	83
Weigh Pig Litters at 21 Days	Breeder's Gazette	84
Corn Cobs Replace Hay*	Virginia Polytechnic Institute	86
Beware! The Powder Post Beetle	The Rural New Yorker	87
Cattle On Grass Make More Money*	Arizona Farm News	91
Water Storage Was Good Business	Soil Conservation	92
Newest, Self-Feeding Silo		Back Cover

*Short Features in this issue. One-year continuing index, Pages 94 and 95

The Farmer's Digest

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In this March issue, we bring you reports on several new developments in agriculture. Among the most important are articles on hay drying and grass silage. If grassland farming is to succeed on most farms, improved means for harvesting and storing forage not utilized as pasture must be found.

In Farmer's Digest, we will continue to bring you detailed information about these and other new practices. In fact, we believe—and we think you agree—that you can get more really good and authentic farm information in less time from Farmer's Digest than from any other source.

If you have a friend, son, neighbor or client, interested in farming, call his attention to Farmer's Digest. Tell him how much a one year subscription can bring him in information he can use. For his convenience, we have included a handy order form in this issue. Call it to his attention today.

Coming In April . . . Don't Miss These Important Articles

Below are a few of the carefully selected articles to appear in next month's issue of Farmer's Digest. If your subscription is expiring or if you are not now a regular subscriber, take a minute now to renew or enter your subscription. Farmer's Digest can make money and save money for you. Don't miss the valuable articles below:

Production Testing of Beef Cattle
Judging Sheep
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Weed and Insect Control in Corn
Feeding Antibiotics To Hogs
When To Buy New Farm Machinery
New Way To Preserve Grass Silage
Larger Cow Stalls and Electric Trainers
How To Buy and Sell A Farm—Taxwise
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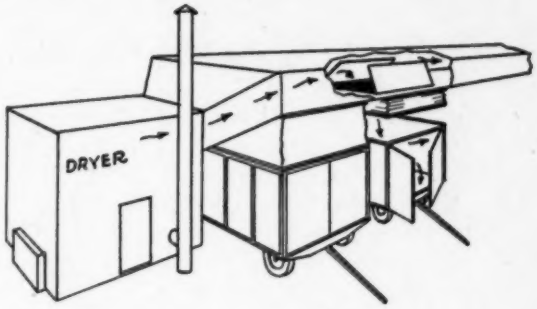
Weed Killer Equipment and How To Use It
Big Business On 120 Acres
Modern Farming—F.F.A. Style
Field Brome in The Orchard

The Farmers Digest

Volume 17 March 1954 Number 9

The wagon method of drying hay from the top down is the cheapest, the fastest and the easiest, they believe . . .



HOW THEY MAKE HAY AT HOMINY HILL FARM

Condensed from New Jersey Farm and Garden

● **Cheaper, faster and easier than any method yet devised—that's the way designers describe this method of wagon drying baled hay from the TOP down.**

THEY "make hay" whether the sun shines or not at Hominy Hill Farms in Colts Neck, N.J. and for something like $2.20 a ton. What's more, the men get home in time for supper, and save themselves a lot of hard work during the day.

The hay-drying system at this well-known Monmouth County Guernsey breeding farm is unique in several ways. Heated air is forced DOWN instead of up. Part of the heated air is reclaimed and used a second, even a third, time. Wagons have sides that require even-sized bales and a device has been invented to insure that the bales are pressed to the right size. Wagons are pulled into place from one side, and leave by the other. There is no awkward maneuvering to get them lined

Reprinted by permission from New Jersey Farm and Garden, Sea Isle City, New Jersey

up under the drying canopy.

Average drying time has ranged only 12-16 hours on 8,000 bales of first cutting, making it a strictly over-night operation. These 30-inch bales were handled in 21 calendar days, June 3 to June 23, at a cost for fuel and electricity of $2.23 a ton, but that included cost of a trial run. Too, there were a number of cloudy and rainy days, with lower-than-average temperatures. Readings on a tester indicated that most of the hay was baled at about 50% moisture.

The system was designed by H. Dreibelbis and R. Poorbaugh, a farm management counsellor of Quakertown, Pa. Henry D. Mercer, owner of the farm, gave them complete freedom in developing the project, as he has done on many occasions for other experiments throughout the years.

Although the Hominy Hill set-up is elaborate, it was based on simple principles that Poorbaugh and Dreibelbis say any farmer can follow.

For instance, they started with the fact that hay containing 50% moisture carries about 1,200 pounds of excess water for each ton of dry hay (20% moisture). Wouldn't it be easier, they reason, to force the water down and out, instead of lifting it up over the top and out?

With this in mind, they converted a hay and implement storage building into a drying shed. A separate cement-block building was built on one end to house the oil-fired drier. Here's how the air circulates:

Heated air is carried from the drier to the wagons through a duct 3x6 feet. The duct extends the length of the barn and is placed directly over, and two feet above, the wagons. Trap doors in the bottom of the duct over each wagon regulate the air flow to the wagon.

The return duct works as follows: The same walls that enclose the sides of the first duct extend to the rafters of the A-type roof. This leaves a four-inch opening at the rafters; used hot air finds its way to the roof from anywhere in the building, following up to the ridge between the 2x4 rafters and is trapped in the upper duct for return to the heater room.

The drier is a modulating pot-type oil burner, with thermostatic control that feeds just enough fuel to keep air temperature at 120 degrees. After the drier has been in operation four hours, part of the air is re-circulated by pulling it from the return air duct.

The system is designed for one-man operation. Wagons enter the barn from one side and leave through the other. There is no need to try to back a four-wheeled wagon, with 8x16-foot

body, into a mere 10x25-foot space! Concrete troughs guide the wagon into exact position, and there is a stop at the front end.

With the wagons in exact position, the operator merely lowers by pulley an accordion-like air seal. This consists of a rectangular hood of canvas fastened to the hot air duct at the top, and on the bottom to a frame the size of the wagon. Next, the operator regulates the flow of hot air by opening or closing the trap door leading from the air duct, again using a rope on a pulley.

The 94x188-inch wagons are all-steel and especially built for the job, but any farmer using wagons for silage can have them rebuilt for dual-purpose work. The Hominy Hill wagons lend themselves readily to a 30-inch bale, and the five-foot sides, to four layers of 14-inch bales, string side down. Six were built —enough to handle 2,000 bales each of first cutting hay and an equal amount of second and third.

How to get those even-size bales? A special metering system was designed by Mr. Poorbaugh, and developed by Mr. Dreibelbis and Sidney Reid, a Freehold implement dealer. It has been installed on more than a dozen balers already in this area, and insures uniform length. This is very important if the wagons are to be loaded properly, or even when placing any baled hay in the barn. Lighter, even bales stack better in storage.

The wagon drier helps level out the work load at Hominy Hill. Hay is baled and loaded on the wagons directly from the baler during the afternoon. It spends the night under the drier and is usually ready for unloading before noon the following day. Each wagon has a capacity of 114 bales, or two tons of dry hay. If in full operation, the system requires at least three men full time to mow, rake, bale, load and unload the six wagons. Since this system is not dependent upon the sun to finish the drying process, work can be regulated more easily.

Mr. Mercer's operation includes an additional drying space in an adjoining shed. This area, 29x73 feet, has an air chamber two feet high under a wooden floor. Air enters the hay through ¾-inch holes bored in the floor. The holes equal 10% of the floor area. The air chamber under the floor is divided into three parts and is connected by a duct to the same drier that serves the wagon drying shed.

The folks who designed this method of hay drying say it is the cheapest and best they have seen, and they feel it is perfectly capable of being adapted to any farm, large or small, at no more cost than a conventional hay-drying system.

What Not To Do When You Drive A Tractor

Tractors don't think but neither do some tractor drivers . . .

Condensed from Nebraska Farmer

Dan Kitchen

THE rear wheels of the tractor were mired in slippery, wet mud. The drawbar had been removed. The operator chained a four by four to the wheels for home-made traction, and the stage was set.

The gearshift was moved to low, the throttle opened, and the clutch engaged. The tractor moved—but the big drivewheels did not. Locked in the mud by the chain and timber they held while the chassis of the tractor turned about the axle. Rearing and falling back like a loco horse, the tractor pinned and crushed the luckless figure on the seat.

A tragedy? In this case, no. The operator so ruthessly handled was Jughead, the straw-stuffed dummy fashioned by University of Nebraska Agricultural Engineers, the place the Ag. College campus, and the occasion the annual Farm Tractor Field Day.

It was the beginning of a long, hard summer for Jughead. From Sidney in the west to Humboldt in the east, he ranged across Nebraska to be mangled under the steering wheel of his tractor, to be soaked by gasoline and oil, and to provide a vivid object lesson to a total of 21,000 spectators.

Let's follow Jughead through the afternoon of the Tractor Field Day.

First, the tractor was hitched properly to a heavy load. When the clutch was engaged, the wheels spun, the tractor bounced, but the load failed to move.

For a second attempt, Jug-

Reprinted by permission from Nebraska Farmer, Lincoln, Nebraska

head hitched the same load, not to the drawbar, but to the axle of his tractor. When the clutch was engaged, the tractor reared —fell backward, pinning Jughead beneath. Lesson number one: **Always hitch to the drawbar!**

Jughead next tried to drive his tractor forward with the rear wheels in a 14-inch hole, simulating conditions encountered when the tractor is forced through ditches or deeply mired in soft ground. There was nothing hitched to the tractor. But when power was applied, the front wheels came up and over —and Jughead was underneath again. Also demonstrated was the folly of chaining a post to the drive wheel for positive traction. Lesson number two: **Use care when crossing ditches or when your tractor is mired. Back your tractor out—or get help.** Remember, too, that the rear wheels of a tractor left overnight in cold weather can freeze to wet ground, leading to the same danger.

Jughead represented a type of operator often encountered, always hurrying, never stopping to think, and failing to recognize danger until too late.

With little brother in his lap, Bozo zig-zagged, cut corners, and in general showed his ignorance of safe tractor operation. He ended his career by applying the inside wheel brakes on a fast turn. Over went the tractor, crushing Bozo and little brother. Applying a wheel brake with the power on not only stops that wheel, it doubles the speed of the other wheel. This can be and often is fatal at road speeds. Lessons: **Never carry extra riders. Horseplay has no place around tractors. Don't use individual wheel brakes at road speeds.**

Jughead put in one last appearance, tipping his tractor sideways while turning at what he thought was moderate speed. The inside wheel struck a seven-inch block. Lesson: **Slow down when going is rough or tall weeds and grass conceal obstructions.**

Any 4-H tractor club member can tell you that a tractor is a dangerous vehicle for high way travel. Surprising enough, most highway tractor fatalities occur, not from collisions, but from overturning or falling off. (Of fourteen fatal tractor accidents on Nebraska roads in 1952, only one resulted from collision.) A high center of gravity, a short wheelbase, and no springs make a tractor as hard to handle at 15 miles per hour as a motorcar is at sixty. Let your good judgment tell you when to slow down.

To protect against collision, use a ten-foot pole with a red flag. This will aid in warning high speed traffic that a slow-moving vehicle is ahead of them.

Never, never take an unlighted implement on the road at night. You have no right to commit murder in the process of suicide.

On the farm, steep slopes and creek banks take their toll. Try to arrange your fields to avoid these hazards. Remember that the power take-off and belt drive are dangerous. They should be shielded—then treated with respect. And never adjust clean, or oil a machine while it is running. Many operators do—and all too often, we see an empty sleeve as a result.

Be careful yourself—preach safety to your hired help and youngsters. When the latter are old enough and strong enough to handle a tractor, see to it that they are wise enough.

Loose Housing Has Strong And Weak Points

You've heard a lot of things about loose housing for dairy cattle. Some good and some bad. Here are the things you can expect with such a system as outlined by Stan Witzel, farm engineer at the University of Wisconsin.

Witzel says you can produce milk with less time and effort—if your loose housing is properly planned and operated. Herd size can be built up or cut down with little expense. Housing costs can be less—much less, if necessary.

But success with loose housing requires first, a successful dairyman. Bulk milk and pipelines—logical partners to loose housing—demand clean operations. The loss of a tank of milk would be more serious than the loss of a can of milk when dirt is a problem.

Witzel says it's definitely possible to produce high quality milk, to keep cows clean, and to satisfy the sanitarians with the complete loose housing system. He adds there are enough such successful systems in Wisconsin now to prove that the job can be done.

He feels the following points are pretty necessary for a successful loose housing program: 1. Mechanized crop harvesting. 2. Storage that preserves crop feeding value, for self-feeding or mechanical feeding either under roof or out-of-doors. 3. A paved lot well sloped for drainage and easily cleaned with tractor scraper. 4. An open, cold bedded area with the year's supply of chopped bedding stored above or at one side. 5. A modern milking parlor with elevated stalls, cleaned in place milk pipeline, bulk milk cooling, and bulk milk transportation to market. 6. Calves and young stock housed in open shelter.

University of Wisconsin

GRASS SILAGE Cuts Costs

Two farm managers tell their experience with long cut grass, silage stacks and preservatives . . .

Condensed from Journal of American Society of Farm Managers and Rural Appraisers

G. F. Thorkelson and Owen Owens

GRASS silage over the years has proven itself a cost cutter in two ways—it lowers feed costs and can be a labor saver.

In the search for lower cost of production, these two items are of utmost importance. They usually comprise over 50-75% of the total cost.

Recently Michigan State College in its Bulletin, "Reducing Feed Costs, Feed More Roughage, Less Grain," added valuable information on this subject. They state that cows capable of producing up to 10,000 pounds of 3.5% milk need only a ton or less of farm produced grain with high quality roughage. Others say that 80-85% of a cow's inherited production capacity can be obtained by the feeding of quality roughage alone. The Michigan studies showed three herds producing equal amounts of milk. Group I with a low rate of concentrate feeding had a feed cost of $151.00 per cow. Group II with less roughage and medium concentrate feeding had a feed cost of $165.00 per cow. The third group received a high level of concentrate, 4,426 lbs. per cow, and had a feed cost of $197.00 per cow or $46 more than the lowest concentrate level. The increased profit margin is worth consideration in time of lower market prices. One of the farms in the Michigan experiment used only grass silage, the remainder used limited grass silage. This experiment and many others point up the necessity for cutting feed costs. Quality of roughage is the number one consideration. Late, mature, woody,

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bleached hay or roughage in any preserved form is not good feed.

Grass Silage Preserves Feed Value

In our northern areas, rainy spells frequently hamper haying operations and many farms are without adequate hay storage. Making grass silage is an excellent way of preserving most of the food value in the forage crop.

Beltsville station figures show a 25% loss in total dry matter per acre in field cured hay, 19% when a barn dryer was used and 17% in grass silage. A later experiment showed 40% loss in field cured hay, 9% in barn dried hay and 14% in grass silage. The last figure checks with the estimates of farmers in the Midwest. Many farmers have looked upon grass silage with the mistaken idea that it is a way of making excellent feed out of poor quality grass. You can get out of grass silage only a little less than the quality of product when ensiled. Grass silage must be made at the proper maturity to be good feed.

Wisconsin Farmers Use Grass Silage

Pepin County, Wisconsin reports 36% of the farmers harvesting hay for silage. Mr. T. A. Parker, County Agent, has been an ardent supporter of grass silage for years. This program has increased milk production per cow, numbers of cows on farms and tended to level out production in that county. Many farmers now have 10-12 consecutive years of successful use of grass silage. This county now has more 400 lb. dairy herds than it had 300 lb. herds a few years ago, according to Mr. Parker.

Milk producers of that area have found that grass silage has several very good features:

1. Grass silage is a cheap feed supply.
2. Usually better quality of feed is secured.
3. Grass silage may be made during adverse weather.
4. Cost of storage is less.
5. Less danger of fire.
6. Grass silage can be carried over several years and used during shortage periods.

New Methods of Storage

A shortage of silos to store the increased grass silage crop has created interest in several new methods of handling. One is long grass silage. For many small farms the cost of a chopper and blower may be excessive. If a buck rake or ordinary hay loader is available, the farmer can make long grass silage. Much of the long grass silage is put in trenches or stack silos. It preserves well and in reality is easy to remove from either a trench silo or stack. Actually, it preserves and removes from the stack the same as pea silage,

which has been used for many years in the Midwest. While a few farmers have tried long grass silage satisfactorily, its greatest utilization has been in the south and east. As a low cost method of roughage handling long grass silage has much in its favor.

The grass silage stack is no longer a curiosity. Robert Burnhardt of Harmony, Minnesota, now in his third year with stack silage, says, "I like grass silage and I like the stack method. Spoilage hasn't been excessive, with 6-9 inches on the sides and about the same as a silo on top. I feed all of it to my cows in a bunk and they eat it." Robert is hoping to expand his dairy operation and build more stack silos for feed.

The round stack silo, built with the aid of snow fences to keep the sides straight, is the most practical where less than 100-125 tons are to be made. Rectangular stacks work out better from 150 tons up. Less spoilage occurs in high stacks due to less surface exposed and better packing. One of the keys to grass silage in stacks is packing at time of making and daily for at least a week afterwards.

George Nierling, Mabel, Minnesota, who has his second stack silo, urges plenty of tramping for good results.

New interest is now being developed in trench silos for grass silage. The underground trench silo is in use on the Roger Johnson farm near Harmony, Minnesota. Roger has his trench full for the fourth year and has discontinued use of his conventional silo. He has about 150 tons in the trench which is made of earth only. He feeds with his tractor into bunks and says it saves labor in making and feeding. The Johnson Bros. have several farms and have built a 100 ton trench silo in a pasture hill side, where a rock floor was available, as a reserve feed supply for their farms.

A new above ground trench silo with a concrete floor and plank sides costing $500-$600 has caused considerable comment as it appears well adapted to self feeding practices. Underground trenches, unless sites are unusual, have given some trouble when self feeding has been practiced. Several of these new type silos will be constructed in the Midwest this year.

Wilting and Preservatives

Conventional silos still store a great percentage of the grass silage made. Farmers using conventional silos have a problem of either wilting or using a preservative in the silo. Grasses and legume will have about 75% moisture at hay making stage and should be wilted down to below 68% but not lower than about 58%. When haying weather is such as to make wilting undesirable, a preservative can be added.

A new preservative is Sulfurdioxide gas (SO2). It combines with the moisture in the grass to form sulphurous acid which prevents fermentation. Higher protein and vitamin content are claimed for this silage due to less loss from fermentation. Some farmers are trying the SO2 method this year. Costs appear comparable to other preservatives. Mr. Ed Ringhofer of Owatonna has used this method for two years and says, "My results from feeding this silage are 'very good.' The strong smell, usually associated with grass silage, is greatly reduced. My cows were up both in flow and test since feeding this silage according to my DHIA tester." Other preservatives used are molasses, corn and cob meal and some whey powder. Molasses, for some years, has been too high in price but in 1953 was available at rates comparable to corn and cob meal. Usually 60-75 lbs. of molasses or 100-200 lbs. of corn and cob meal is used per ton of green material. Whey powder is about 72% milk sugar and 40-50 lbs. per ton is normally used. Machinery for application of these materials is available. However, on small farms hand distribution, if fairly uniform, works satisfactorily.

Preservatives have their main value in making possible the harvesting of a grass crop and preserving it during rainy weather when adequate wilting is impossible. The preservatives also reduce labor and machinery cost by making possible ensiling direct from the standing grass.

Try Outdoor Feeding

Grass silage is very well adapted to outdoor feeding. The use of bunks or wagons loaded directly from the silo or with a tractor lift reduces labor materially.

Cattle seem to prefer eating at least part of their silage outdoors. Their consumption is higher when fed outdoors. Barn feeding of grass silage is usually done after milking. If considerable odor is present, barn ventilation should be adequate to prevent flavoring of milk.

Grass silage users who are successful, usually have several years of experience. The eye of the farmer checking on his maturity and wilting is the factor that spells success or failure of a grass silage enterprise.

Market Prices Benefited—An estimated 865,000 head of lower grade cattle were diverted from normal trade channels during 1953 by USDA purchases of beef products. USDA officials state that this diversion, over 90 per cent of which took effect during the heavy fall marketing season, has strongly benefited market prices for lower grades of cattle.

A Livestock Medicine Chest Is Well Worth While

An English Veterinarian suggests dressings and drenches for emergencies . . .

Condensed from Farmer & Stock-Breeder

"IF ONLY I'd had one of your 'Blown' drinks at the farm I could have given you a ring and asked your advice, given her the drench and saved you a journey." "Saved you money," I replied. "How many times have I told you that you ought to keep a proper medical chest in the dairy?"

I wonder how many times that bit of conversation has taken place between farmer and vet? You would be astonished at the money you could save by having a few simple things handy in case of emergency.

I am not suggesting that you stock up with medicines and one thing or another, and try to treat everything yourselves. That would be even more foolish than not having anything handy at all. What I am suggesting is that you approach your own vet and ask his advice about stocking a first aid medical chest.

All you want is a good sized wooden cupboard with a latch on the door. If you haven't got a latch the door will always hang open, steam will get in and half the stuff inside will be ruined.

Now what are you going to put in it? First of all you'll want a bottle of good antiseptic. Something suitable for bathing wounds or washing your hands in. Don't be lavish with it—use it just as it says on the directions and don't think that because it says a dessertspoonful to a gallon of warm water that a tablespoonful will do twice as much good. It won't. All these good disinfectants are made to work best at a certain strength

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and you won't do better than that by wasting the stuff.

A good pair of half curved scissors for cutting hair away from wounds wouldn't be a bad investment, but don't go cutting binder twine with them, and grease them after you've used them. A "stubby" bulb thermometer would be a good buy too.

Next you'll want some good "general" dry dressing for application to wounds—far better than smearing stockholm tar all over them. Get a tin of it from your vet. If you keep the lid on tightly after use, it will last for years.

What about half a dozen "colic" drinks and half a dozen "Blown" drinks while you're at it. You can get these from your vet, too, and then he will know just what you are pouring down your cow's throat instead of some "hit and miss" quack remedy. At the same time you can ask him for a bottle of liniment or white oils (very useful for warming a cow up after an exhausting calving). Also a bottle of lotion for sore teats and a tin of udder ointment for rubbing into hard quarters.

I don't want to encourage you to start messing about with difficult calving cases. That is an expert's job, but if you do calve a cow down now and again, then half a dozen cotton calving ropes should be kept in the cupboard. I'd far rather you used these and boiled them after each calving than some dirty plough line or tow rope.

Half a dozen cleansing drenches, a box of pessaries, a dozen 3-inch bandages, a roll of cotton wool, and you've got almost everything you need. If you want to spend a bit more, what about a gallon of cod-liver oil and a gallon of castor oil, and a pint of methylated spirits.

A WARNING

Now just a word on penicillin and sulphonilamide. Don't go trying to persuade your vet, to let you have either of these drugs for the cupboard. Both of them have a very limited action and they can be more harmful than good in the wrong hands.

Many of us have seen those "scouring," staggering cases of sulphonilamide poisoning. These things must be used under your vet's supervision, for given in the wrong dose to the wrong case they can kill as surely as other poisons. It is the indiscriminate use of these valuable drugs by the unqualified that has led to the growth of resistant strains of bacteria.

Well, that's about it. That old cupboard in the attic is just the thing. Get it down, give it a coat of paint and start now. The next time you get a cow with a nasty cut that is bleeding badly, you won't be having to race into town in the car for cotton wool and bandage.

DO FARMERS FACE COMPLETE CONTROL?

A challenging article every farmer should read. Can a new policy of scarcity for all replace our historic goal of production and abundance?

Condensed from Hoard's Dairyman.

W. P. Mortenson

AMERICAN grain farmers have spoken. Almost 9 out of every 10 farmers in 18 leading wheat states voted this fall to let the government control their wheat output in order that they might obtain federal price support at 90 per cent of parity.

Under the plan, which carried such an overwhelming vote, a wheat grower not only approved acreage control but he gave the government the right and obligation to determine how many bushels he may sell next year without paying a penlaty. It is doubtful that these farmers appreciated what those controls would mean in limiting the freedom of action in operating their farms.

This vote was on wheat only but the trend of thinking is obvious. Is there any reason why they should reverse their vote when the time comes to vote on controlling the output of corn, oats, rye, and flax? And what about livestock? If the government is to control crop acres, why not livestock numbers? Just where is American agriculture headed? The trend seems clear.

More than ordinary significance should be attached to this vote for at least three reasons:

1. Farmers in this area had recently played their part in putting in the Republican party which has been against government controls,

2. The Secretary of Agriculture has recently made public appearances arguing against government control of agriculture and of the affairs of individual farmers, and

3. The voting was in a period of relatively prosperous agriculture when controls might not appear necessary.

The very producers who vot-

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ed for controls will tell you that regimentation is strictly against their principles. Of course, these farmers didn't vote for controls. They voted against the danger of ruinous wheat prices. Many still remember the dark days of the early 1930's. After all, when intelligent people go to the polling booth they can be expected to vote for what they believe to be in their own best interests. So do we all. But how will wheat control and the artificial prices that go with it affect other phases of agriculture?

Let us take, for example, the dairy and poultry industries, both heavy users of feed grains. If the producers of our grains and feed crops follow a policy of continuing production control and artificial price pegging, then producers of livestock and poultry may have little choice but to fall in line. Controls, once established, will tend to become a growing and permanent feature of our agriculture. Difficulties of enforcement will multiply as new products come under the umbrella.

The farm surplus problem is not the child of either political party. It is, instead, an infant that has boldly walked into the arms of the party in power and is going to stay right there and continue to howl whether papa spells his name with a capital D or a capital R. Like the gremlin of World War II, he's going to sit on the party chief's shoulder and ask him if he could use a few votes at the next election, certainly nothing to be laughed off in our American democracy.

Why has this farm surplus problem gripped us again after a quiet spell of more than a decade? The answer is quite simple. World War II left Europe riddled with a shortage of food and the lack of manpower and facilities to produce it. During the last half of the 1940's we came to their rescue with vast quantities of agricultural products paid for largely by American funds. Now for several seasons the European farms have been rehabilitated and come back into production so they have less crying needs for our farm output. With less of our food products moving across the oceans, more has to be stored at home. For at least three or four years we have been storing grains and livestock products at staggering rates.

The combined stocks of wheat and corn under federal storage add up to more than a billion bushels. These two crops would fill a bin 20 feet wide and 25 feet high from Chicago to Pittsburgh (473 miles). More is rolling in this fall. Butter, vegetable oils, and nonfat dry milk solids have been purchased in tremendous quantities with taxpayers' money.

Under the present price support legislation the Secretary of Agriculture has no choice but to continue piling more products into the already bulging grain bins and cold storage warehouses. Even more serious is the fact that the situation is rapidly growing worse, not better. If these stocks were released into American consumption they would break the markets almost overnight.

To help keep the President's job from becoming boresome, the very month that one government agency was forced into a program of curtailing the nation's wheat supply, another agency, almost across the street, was forced by the facts to admit that the cost of living had reached a new all-time high. Pleasant news to the large family with a small pocketbook, of which we have millions.

Farmers, however, are already losing position and they naturally want to avoid a landslide of economic trouble. Based on the comparison of prices received and paid, farmers are in the weakest position they have been in for a decade. The value of farm products in terms of what the farmers buy has slipped 14 points below the 10-year average 1942-51.

Is it any wonder that farmers, seeing things as they do, are willing to vote controls upon themselves in order to keep farm prices from skidding to where farmers may be in danger of suffering serious losses?

There are those from urban areas who condemn farmers as being selfish and shortsighted in curtailing the production of needed goods. But farmers are quick to point out that most of what they learned they absorbed from organized labor and large industry.

It has consistently been the policy of labor, officially or otherwise, to shorten the work week and increase the wage rate.

During the recent labor strike in the industry that "made Milwaukee famous," organized labor demanded, among other things, a 35-hour week. When farmers are working almost twice that number of hours during the busy season is it any wonder that they also put on pressure for less production and fewer hours if they believe they can improve their economic welfare thereby? Organized labor has shown them what can be done, so why sit back and wait?

As a general practice, when inventories begin to pile up, industry reduces its production more than it reduces its prices. It should, of course, be said that in manufacturing the highest cost items are labor and raw materials. By reducing output, both of these expense items can

be reduced accordingly. Industry operates under a system of administered prices which can be kept under quite rigid control without government aid. It is thus a fact that agriculture is the last link in our economic chain to reduce output through organized effort.

The basic difference is that farmers are adopting the ballot box rather than the picket line to impose their demands upon the public. It is generally agreed that there is probably no other way that three million farmers, operating small, independent farms, can exercise the same influence as a few powerful labor unions or a small number of giant corporations.

We have awed the world by our capacity to invent ingenious labor-saving devices but how will that benefit us as a nation if organized political pressure groups adopt a policy of trying to get more and more by producing less and less? Modern machines can improve our welfare to the extent that they are permitted to operate at capacity. This cannot be done under a policy whereby special interest groups force a program of limited production upon our American economy.

The question is, what groups will offer the leadership in reversing a trend that has now been underway and growing for more than a generation?

The fact is generally recognized that a workable farm program may be necessary to avoid the possibilities of a drastic situation from developing in American agriculture. However, there is strong public sentiment against a "solution" which involves creating a scarcity. Moreover, from a purely economic point of view, such a program has distinct drawbacks. If farmers are to market fewer bushels, each bushel will have to carry a heavier load of the fixed production and marketing costs.

Thoughtful people agree that, for the longer pull, we must adjust our economy, industry, and agriculture alike, to increase production so as to keep pace with our growing population and its expanding requirements of food, fiber, and industrial products. Yet production controls and the limitations of output affecting large sectors of both agriculture and industry are again finding their way into the economy as they did in the 1930's.

The problem of America and Americans is to reverse that trend—and the sooner the better. America has become great because of its productivity, not because of new inventions to create scarcity. How will we reverse our present trend of reducing the nation's output to that of expanding it?

200-Bushel-per Acre Corn Yields

Now the experts are setting the stage for 200 bushel corn yields and evidence shows they may be the most profitable. . . .

Condensed from National Fertilizer Review.

K. C. Berger, University of Wisconsin

TO SET the stage for a 200-bushel corn crop you will need a soil with good aeration and moisture-holding capacity. Silt loam soils with plenty of fresh organic matter, when properly worked so as to be well aerated, will probably give the best results.

Heavier soils if properly aerated, and lighter soils with supplemental irrigation can also produce 200 bushels per acre in good growing seasons. It is highly desirable to plow under a good alfalfa or clover sod, and this sod should be thoroughly disked before plowing. A heavy application of manure is also desirable and should be worked in with the sod before plowing. The manure will supply not only nitrogen, phosphorus and potassium, but also minor elements, such as copper, zinc and manganese.

Disking and killing perennial weeds before plowing will reduce the amount of work needed after plowing. This will avoid much of the compaction caused by heavy tractors after land is plowed. Plowing is easier and good tilth is obtained. Cultivation should also be kept to a minimum to avoid root pruning. In some cases good weed control can be obtained with one pre-emergence weed spray and only one cultivation.

In order to get 200-bushel corn yields it will be necessary not only to supply the plant food required, but also to have a plant population of from 18,000 to 21,000 plants per acre of the right maturity. Good structure and aeration in the soil likewise are essential. This means drilling or hill dropping the corn, one kernel every seven to eight inches or two every 14 to 16 inches apart in 40-inch rows.

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A 200-bushel corn crop (ears and stalks) contains 300 pounds of nitrogen (N), 120 pounds of phosphate (P^2O^5), and 240 pounds of potash (K^2O). These amounts must be obtained by the growing corn from the soil, manure, plowdown crop, and fertilizer applied; otherwise the 200-bushel yield is not possible. The less the crop can get from the soil, the more it will have to get from manure and fertilizer. The soil test results will tell us how much is present in the soil in available form. From these results we can calculate how much will have to be added in the form of manure and fertilizer. The corn crop cannot get in one season all of what is available in the soil or of what is applied as manure and fertilizer.

The amounts the crop can get are given in the tabulation which follows, which also shows the amounts of manure and fertilizer needed on a soil of medium fertility for 200 bushels of corn. In this example, it is supposed that the test on a sample of soil reveals pounds per acre of available nutrients as follows:

Nitrogen—225 (N)

Phosphorus—40 (P) or 92 when converted to fertilizer phosphate (P^2O^5)

Potassium—150 (K) or 180 when converted to fertilizer potash (K^2O)

Accordingly, the amounts of fertilizer and manure required for a 200-bushel corn crop would be as shown in the chart:

Plant-food Requirements for 200-bushel Yield

Source of Nutrient Element	Lbs. Nitrogen		Lbs. Phosphorus		Lbs. Potassium	
	Present	Crop Gets	Present	Crop Gets	Present	Crop Gets
Soil	225	40% or 90	92	40% or 37	180	40% or 72
Good alfalfa sod plowed down	100	40% or 40				
15 tons manure	150	30% or 45	75	30% or 23	150	50% or 75
1300 lbs. 10-10-10 broadcast	130	60% or 68	130	30% or 39	130	50% or 65
400 lbs. 4-16-16	16	60% or 10	64	30% or 19	64	50% or 32
250 lbs. ammonium nitrate sidedressed	82	60% or 48				
Totals crop may get	—	301	—	118	—	244
Totals needed	—	300	—	120	—	240

In the totals given, the requirements are met just about on the "head." Some soils might require additional copper or zinc for a 200-bushel yield. The application of 5 pounds of copper oxide or 10 to 15 pounds of copper sulfate, and 15 pounds of zinc sulfate to some light-colored soil before planting has been shown to increase yields. The minor elements can be applied broadcast with the fertilizer.

Does Procedure Pay Off?

A question might be raised, Is this economically f e a s i b l e? Therefore, costs were calculated and compared with a 75-bushel crop, which would be obtained under average management. These cost figures are given in the tabulation that follows:

These figures indicate that a 200-bushel crop will be more profitable than a 75-bushel crop. The next question is, Can a 200-bu. crop be produced? IN 1952 several experiments were conducted on the Albert Skolas farm near Madison, Wisconsin. These experiments were concerned with fertilizer placement and methods of planting. Planting without previous plowing on an alfalfa-brome sod resulted in a yield of 128 bushels per acre with 1000 pounds of fertilizer applied in the row and broadcast. Disking previous to planting with the same fertilizer treatment resulted in a yield of 161 bushels. With conventional plowing and addition with special planter of 1000 pounds of fertilizer in bands at planting time, and then side-dressing, a yield of 190 bushels per acre was obtained. On the same field with a conventional planter and an equal amount of fertilizer applied in the conventional manner, a yield of 134 bushels was obtained with a smaller corn population. The yield with usual 200 pounds of

Profit Soars With High Yields

Materials and Other Items Involved		Costs for 200-bushel corn crop	Costs for 75-bushel corn crop
Fetilizer for 200 bushels:			
1300 lbs. 10-10-10	$45.70		
400 lbs. 4-16-16	13.03		
250 lbs. Am. Nitrate	10.78		
Total		$ 69.51	
Fertilizer for 75 bu.: 150 lbs. 4-16-4			$ 4.89
Manure: 15 tons for 200 bu		45.00	
8 tons for 75 bu.			24.00
Working land, seed, taxes, overhead, etc.		45.00	45.00
Extra cost of seed and harvesting for 200 bu.		10.00	
Total cost		169.51	73.89
Value at $1.60 per bu.		320.00	120.00
NET PROFIT		150.49	46.11

fertilizer and the usual methods of planting and tillage in a nearby field produced 85 bushels.

With proper tillage methods, good moisture, good aeration, good seed, and adequate, balanced fertilizers, 200-bushel yields of corn can become common-place.

Lumps On Cattle Mean Grub Trouble

Cattle owners are forewarned to be on the lookout this winter for grubs in the backs of their beef or dairy animals. In February and March, young cattle grubs complete a nine month's journey through the animal's body. Once they reach the back, they bore small holes in the choicest part of the hide and cause the characteristic lumps or "bots".

G. E. Lehker, Purdue University extension entomologist, says cattle buyers will pay less for grubby animals since damaged meat must be trimmed away and the hides are ruined for top grade leather.

His explanation for the grubs is that they were hatched from the eggs of heel flies during the spring and summer months. The flies deposited their eggs on the lower parts of the animal's body, usually on the hind legs near the hocks. Then, when the eggs hatched, the young grubs commenced burrowing upward through the body. In winter they become located under the skin of the back, and start forcing their way out.

However, cattle owners can stop this insect menace by treating for grubs when the lumps become noticeable. Their weapon for grub control is rotenone, either as a spray, wash or dust.

The larger herd owners may prefer to spray, since it's faster. Spray ingredients include 7.5 pounds of 5 percent rotenone-bearing derris or cube powder to 100 gallons of water. Lehker says to apply with a power sprayer at 400 pounds pressure, using one gallon of spray per animal, and holding the spray nozzle 12 to 16 inches from the backs of the animals.

If you try wash control, use 12 ounces of 5 percent rotenone powder and 4 ounces of granular soap to one gallon of water. Apply about one pint per animal, rubbing it into the back with a scrub brush.

Small herd owners may elect to use the dust. Lehker recommends about 3.5 ounces of a dust that contains one part of 5 percent rotenone powder and two parts of pyrophyllite, Tripolo earth, or similar inert powder. Merely rub the dust into the hair and grub openings of each animal with a stiff brush.

What Is Your Grain to Milk Ratio?

Use the chart to check your herd feeding program. . . .

Condensed from American Agriculturist.

Clarence H. Parsons
EXTENSION DAIRYMAN, UNIVERSITY OF MASSACHUSETTS

IT IS much easier to visualize your feeding program by looking at charts than it is to try to draw conclusions from columns of figures. For that reason graphs and charts were prepared for a series of meetings for Dairy Herd Improvement Association members in several Massachusetts counties.

With the charts, an invidual dairyman can take information from his own DHIA book and readily plot the progress of his herd during the previous year. Charts used in this analysis included monthly average production per cow, monthly feed cost, return over feed cost, etc.

But of all the charts, the one titled "Grain to Milk Ratio" created the most interest and most discussion in the groups. On this chart are plotted the actual grain to milk ratios for three herds.

The grain to milk ratio, refers to the number of pounds of milk produced per pound of grain fed, including grain fed to dry cows. You can use the graph to chart your own dairy. Just open your DHIA book to the monthly herd summary, divide the total number of pounds of milk produced in January by the total number of pounds of grain fed that month. Repeat this for each month and plot the results on the graph.

The solid line on the chart represents a herd which had not been on DHIA much more than a year; and the owner was comparatively new in the dairy business. His ratio of grain to milk was 1 to 2.2 in January, 1 to 2.7 in February, and his widest ration of the whole year was 1 to 4.5 in May.

The broken line on the chart represents the ratio for a high

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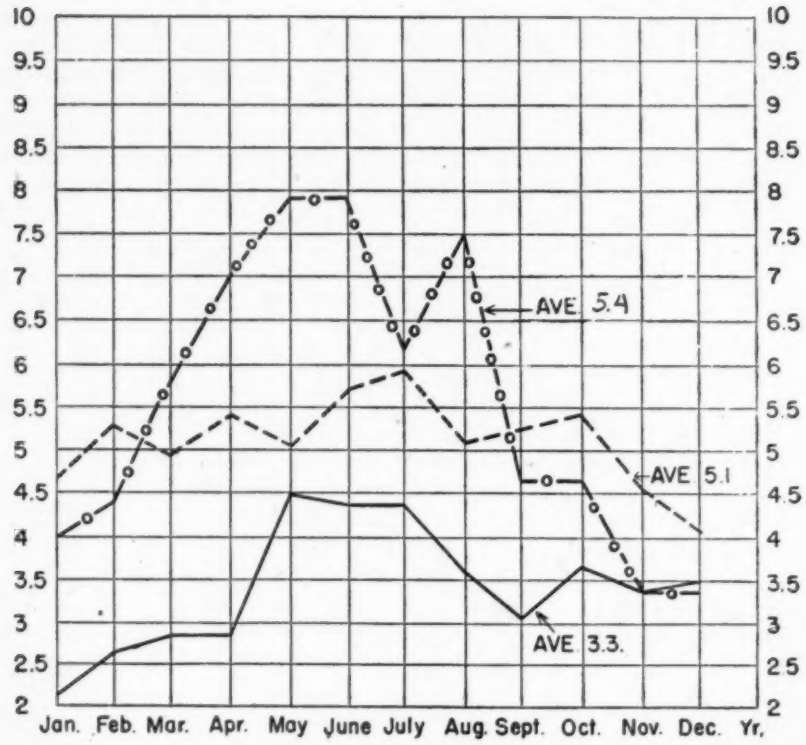
producing herd which was fed very good quality roughage throughout the year but for which no pasture was available. This herd showed an unusually even ratio throughout the year. The "dot-dash" line gives the ratio for a herd that grazed on good pasture and the owner took advantage of it.

Many dairymen were amazed at the ratio when they actually figured it out for their own herds and in some cases the monthly variation was most enlightening. Of course the examination of the graphs was followed by the question, "How much grain should we feed?" and there were about as many opinions as there were dairymen present. However, it was



You can get your own grain to milk ratio by months using figures in your DHIA book. Divide the total pounds of milk for each month by the total grain fed including what's fed to dry cows. Spot your dots on the graph, connect the twelve dots, and compare the result with those shown above.

generally agreed that it is poor economy to try to breed high producing cattle and then skimp them on feed and so limit their production. On the other hand, anyone whose grain to milk ratio for the entire year is less than 1 to 3 has a very large feed bill to pay.

The accompanying Table 1 shows the average production per cow and the average cost of feed for two different dairymen in the same county. Production per cow was almost the same for both herds but one owner fed nearly twice as much grain per cow. The difference of $60 per cow in cost of feed, when multiplied by the number of cows is a sizeable item. Could Farmer B have increased his production by heavier grain feeding? We don't know the answer to that but we do know that Farmer A with a grain-milk ratio of 1 to 2.1 had an expensive feeding program.

Table 2 gives the figures for two other farms. In this case Farmer D had much larger production and yet fed 1,500 pounds less grain per cow than Farmer C. Farmer D has a very good pasture and year around roughage program but he doesn't know one cow from another and feeds all of them the same. That is an expensive method of feeding milk cows.

TABLE I

	Farmer A	Farmer B
No. cows	24	37
Pounds milk per cow	8544	8469
Pounds fat per cow	334	331
Pounds grain per cow	4090	2114
Cost of grain per cow	$141	$ 80
Value roughage per cow	$130	$131
Total feed cost per cow	$271	$211
Grain to Milk Ratio	1 to 2.1	1 to 4.0

TABLE II

	Farmer C	Farmer D
No. cows	31	49
Pounds milk per cow	9914	12307
Pounds fat per cow	338	452
Pounds grain per cow	3797	2277
Cost of grain per cow	$166	$ 85
Value roughage per cow	$124	$138
Total feed cost per cow	$290	$223
Grain to Milk Ratio	1 to 2.4	1 to 5.1

There is a grain feeding table in the front of the DHIA book that gives the normal requirement of grain for cows with different percentages of butterfat, and as a supplement to poor, good or excellent roughage. Many feed companies have handy feeding tables available for the use of their customers and the extension services in most states have them available. These grain feeding tables are excellent guides for the feeding of individual cows. However, judgment should be used with them as some cows require more feed than others.

A grain to milk ratio is not a good guide for individual feeding but it is an excellent measure of the feeding program for the entire herd. There is still room on the accompanying chart to plot one more herd. Why don't you see how yours compares?

How To Figure What Your Steers Are Worth

If you know the value of steers at the terminal market, you can tell pretty well what your steers should bring f.o.b. ranch.

Shrinkage makes the difference along with marketing costs, says Ira M. Stevens, economist at the University of Wyoming. The net value per animal should be the same.

He sets up a typical example of a steer weighing 700 lbs. at the ranch. At an estimated 6 percent shrinkage to market the loss is 42 lbs. At $19.00 per cwt. terminal market price, the steer would gross $125.02 from which transportation, selling, and risk costs must be deducted, or $5.60, leaving a net price at the market of $119.42.

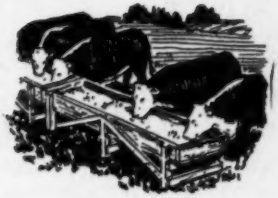
Granted a 10 percent spread between ranch and terminal, the f.o.b. ranch price drops to $17.11 per cwt. Multiplying this figure by the ranch weight of 700 lbs. amount to $119.77, the gross value of the steer, but subtracting 35c for brand inspection and handling leaves a net value of $119.42—the same as the value received at the terminal.

Similar costs apply at the local auction, where shrinkage amounts to about 3 percent, transportation, selling, and risk costs to $2.80, and price spread between terminal and auction to about 5 percent. The net value per steer is still $119.42, according to Stevens.

In this example it would be equally advantageous, he states, to sell at $19.00 per cwt. at the terminal, $18.00 at the local auction, or $17.11 at the ranch.

University of Wyoming

His Beef Costs Down 20% in Five Years



To make beef for 15c a pound: Grow more grass per acre, cull hard to get fast-gainers, and calve early in sheds

Condensed from Farm Journal

Paul Friggens

WHILE everybody's operating expenses are going higher, a Montana cattleman is producing beef cheaper every year!

Dick Fabrick has knocked about a nickel a pound off his costs in the last five years. He now makes beef for 15 cents—aims to produce it still cheaper.

I flew up to see how Fabrick does it on his Teton County ranch. His story should have some ideas for you.

"We all have to come to producing a cheaper package of beef," Fabrick told me first thing. "Trouble with us farmers and ranchers is that we know less about what it costs us to produce than perhaps any other business."

Fabrick has discarded the cattleman's dream—more land and more stock—and is pioneering a fairly new idea out West. "I don't want to buy out my neighbor. I'm after **more pounds per acre!**"

By expert breeding and feeding, Fabrick has added 75 pounds to his weaning weights in only five years. He's shooting for a 100-pound increase, or a 500-pound **average** weaner!

By fertilizing and pasture rotations, he's at least **doubled** his range forage.

In Montana, they agree that Dick Fabrick is the cattleman of the future—the operator with that cheaper package of beef, and an accurate set of cost figures to prove it! I've seldom seen a simpler, better set of

Reprinted by permission from Farm Journal, Philadelphia, Penna.

ranch books. Fabrick keeps them himself.

A native Hollander, Dick or "Dirk" Fabrick is a big, beetle-browed, hearty man in his sixties. For years he's been a leader in Montana irrigation and conservation affairs. His is a little outfit for the West—only 3,000 acres, with about 275 brood cows. We rode out to see the bloom on Fabrick's Herefords, and his lush irrigated meadows.

"Some of these good meadows used to be 'blow land'," he told me. "In the past, too many ranches simply used whatever feed the season happened to produce. Today we've got to manage these lands."

Fabrick used to be one of Montana's outstanding sheepmen. But short of help and "not getting any younger," he switched five years ago to cattle. In record time, he's demonstrated how well it pays to think in **pounds per acre!** Here's how he did it:

Breeding. Fabrick figured that he'd need 8 to 10 years to boost weaning weights 100 pounds, and get those 500-pound average weaners.

He bought good grade cows, plus 85 purebred Herefords, paying an average of $1,100 for his bulls. Fabrick then split his cows in "A", "B", and "C" herds, and put his top bull on the top 40 to 45 "A" cows. He matched up the rest of his herd the same way, just as the top sheepmen operate today.

"That's where I get my good replacement heifers," Fabrick explains. "You lose a lot when you turn your best bulls in with the whole herd."

Next, he set out for early calves and a bigger percentage calf crop.

He started pushing up his calving crop dates from late April to late March. To help fortify his cows he began feeding ½ pound of cake after January 1. Since 1948, he has moved his calf crop up about three weeks. "That's my head-start on heavier weaners."

How does he get by in that below-zero Montana weather?

"We calve like we used to lamb," Fabrick explains. In fact, he calves in what used to be his lambing sheds. About two weeks before calving, he fetches in the springers, and starts housing about 45 head each night in the sheds. He pens about 25 head of the more advanced springers in eight individual stalls and four larger pens. The other half of the shed holds the remaining 20. As soon as calves drop, Fabrick and his foreman are at work.

"I keep lots of clean straw and an iodine bottle handy—dip the navel the first thing," Fabrick says. When calves are a week or 10 days old, he turns out the cows and calves in pairs

in near-by sheltered creek bottoms. Then he brings more springers to the lot around the calving shed.

"People tell me that shed-calving is a lot of work and nonsense," says Fabrick, "but we find that it's actually **less** work. Besides, experience shows it pays. By shed-calving we get 5% to 10% **more** calves, and **more pounds per acre!**

Fabrick boosts his calf crop another way. For their first calves, he breeds his coming two-year-old heifers in December, and calves them the next fall. Unheard-of in Montana, but successful.

He says: "Those young heifers get the benefit of six months of good grass just before calving. It puts them in the best possible physical condition—we have very little calving trouble and few losses."

"I don't lose money on many dry cows, either,' Fabrick adds. He turns the bulls into the herd early in May for ten weeks, and again on December I for six weeks. "Usually I pick up an extra 12 to 15 fall calves this way. They winter well."

Thus, Fabrick boosted his calf crop in five years from the customary low 80's to 96%!

And now he's beginning to benefit from breeding his replacement heifers.

He culls and sells off about 40 of his poorest cows each year —dry cows, mothers of light, unthrifty calves, or heifers with sub-standard first calves. He weighs his heifers at weaning, again a year later, and once more as two-year-olds. He feeds 'em plenty of hay and ½ pound of cake, then picks his replacements by weight, thrifty growth, conformation, and color.

This year Fabrick's replacement heifers averaged 505 pounds at weaning, to promise still more pounds per acre!

Feeding. "I'm not in the cattle but the grass business," the Montanan says time and again, to emphasize the importance he puts on grass production. No

Here's the Fabrick Box Score:

Year	Ave. Weaning Wt.—Pounds	Pounds Sold	Cost per Pound
1949	400	61,000	19c
1950	414	78,075	18½c
1951	441	104,655	17c
1952	465	118,885	15½c
1953	475	122,500	15c

wonder that Conservation tours make this a model stop!

The cattleman got off his palomino and knelt in his hay meadows—timothy, red top, orchard, wheat grasses, fescues, and blue joint. "Hay used to be light like feathers!" He grabbed a fistful. "See now, it's solid, heavy, substantial. **We cut our biggest hay crop one drought year."**

Fabrick's formula for more grass: fertilizers and rotated pastures.

He divided his ranch into 10 pastures, of 80 to 250 acres each. Then he fertilized his native grasses with 16-20-0, three times in five years.

The rancher pointed to a fertilizer test strip across a meadow. "As soon as we nitrated that strip more than a year ago the timothy started forging ahead." The strip still shows a dark color.

Fabrick is completely sold on range improvement. He has at least doubled production from meadows and pastures.

"The quality of the feed is also improved," he points out. "My cattle used to be crazy about bone meal. Now, since phosphating, they hardly touch it. That's the way to feed minerals—**in the grass, not out of a sack!"**

By rotating, Fabrick gets far better use. "In the big pastures the grass is grown out and getting coarse by the middle of July. We used to lose a lot of coarse, grown-out grass each year. But by dividing up into smaller fields, rotating frequently, and clipping parts of the pastures in late summer, we get the cattle to graze the entire field."

"With a saddle horse and a pitchfork" Fabrick alone irrigates 600 to 700 acres of meadow in 10 days. He uses the pitchfork to make diversion dams from old haystack bottoms. (They don't wash out or erode the banks.)

He gets the water on and off again as quickly as possible.

How does it all add up?

Fabrick's cow-calf outfit is producing 40 pounds of beef per acre on cheap Montana range land. That is probably double the output of most similar operations.

His calves now weigh about 75 pounds at birth, and gain nearly 2 pounds per day to weaning!

How much is due to breeding, how much to feeding? "Maybe 50-50," says the Montana rancher. "Certainly pushing up those calving dates started things. I would say that for the past five years about 35 pounds of my heavier weaning weights are due to earlier calving, and the rest to other factors.

201 lbs. at 4 Months

Records are going to tumble, if farmers find they can push hogs this fast and still hit top grades. . . .

THEY'RE trimming one to two months off the market age of hogs at the University of Missouri. And in the process, a lot of old beliefs on hog raising are being heaved overboard.

One crossbred pig (inbred Poland China X inbred Landrace) in the Missouri tests has pushed the scales to 201 pounds at four months. Others of the same lot, fed under the supervision of Dr. John Lasley, weren't far behind—two hit 193 pounds in the same period. Most hog raisers do well to make that much pork in six months.

Lasley used no magic—nothing but simple breeding, feeding, and management methods, with antibiotics and vitamin B-12 added to the rations. He made sure that the pigs were never hungry.

The tests exploded two theories: (1) That fast-gaining pigs are always fatties; and (2) that antibiotics drag down carcass quality. That 201-pound porker, for instance, graded No. 1, and had only 1½ inches of backfat!

Lasley believes in feeding pigs before they are born. The mother sows got corn with protein supplement and minerals. In the winter a stabilized Vitamin A and D mixture was added. While they were nursing the sows got a bonus of five mg. auremycin per pound of feed.

Shortly after farrowing, the baby pigs started getting aureomycin, mixed with clean sod. (The sod prevents anemia while the pigs are on concrete.)

In the creep feeder on pasture, the pigs had free choice of rolled oats, shelled corn, and a protein supplement made up of dried skim milk, fish meal, soybean oil meal, aureomycin, Vitamin B12, minerals and cod liver oil.

After weaning at 56 days, pigs went on this ration, self-fed on a concrete floor:

Ground yellow corn	1435 lbs.
Tankage (60% protein)	200 lbs.
Soybean meal (44% protein)	300 lbs.
Wheat shorts or middling	100 lbs.
Minerals (equal parts limestone, steamed bone meal, and salt)	10 lbs.
Antibiotic supplement	10 lbs.
B-Vitamin supplement	5 lbs.
Total	2,000 lbs.

The whole lot put on 100 pounds of gain for every 330 pounds of feed. Good hog producers usually use 400 pounds of feed for that much gain.

Lasley steamed the farrowing pens before putting sows into

them, washed the sows' udders before farrowing. The pigs got a shot of bacterin at one, two, and three weeks to ward off disease.

Not many new ideas here, but it shows what we can do when we **put to work** all of the things that we already know.

—Farm Journal.

Hog Prices May Dip, But Mutton to Stay Put In 1954 . . .

Increased hog marketings caused by expanding pig crops indicate that raisers may receive slightly lower prices for hogs in 1954.

Prices for hogs were higher in 1953 than in any year, excepting 1947 and 1948. The primary reason for this, explains John G. McHaney, Texas extension economist, was that hog production had declined for two years and the 1953 pig crop was the smallest in five years.

Production now, however, he points out, is trending upward. Farrowings last fall were above a year ago. And, a five to 10 percent increase is expected this spring. By mid-1954, McHaney foresees slaughterings above the 1953 rate.

From the consumer standpoint, this means that pork supplies will be greater late this year and prices may drop—but only slightly.

A slight decline in sheep and lambs on farms was noted at the beginning of the year. As a result, the economist says fewer sheep and lambs will be put on the block this year and mutton prices should stay about in line with those of '53.

Texas A & M College

Hay Good for Hogs

Hay has long been one of the staple feeds for workstock and cattle and it's just as good for hogs, says John Landers, Oregon animal husbandry specialist. This is important when there's not enough green feed for brood sows in the winter, he continues.

Hog growers who don't have available green grazing for their brood sows can very successfully use a little alfalfa hay to add protein and vitamins to rations. The specialist recommends placing the hay in a rack and feeding it free choice. Hogs probably won't eat more than a pound of hay each day, Landers explains. But the little they do eat will go a long way toward turning them into quality market animals.

Oregon State College

Money Can Grow On Trees

Well-managed tree farms produce good profits . . . up to $5,000 a year

Condensed from The Farmer

Robert G. Rupp

A RICE County, Minnesota, farmer harvests $5,000 worth of posts, pulpwood and lumber from a 150-acre woodlot every year. In Wright County, a farmer has averaged an annual income of $3,000 from trees for the past 10 years. An Itasca County farmer reaped $1,400 from 40 acres. A LeSueur County farmer grossed $10,500 in sawlogs from 66 acres the past 10 years.

In Northern Wisconsin's Oneida County, 400 Christmas trees each year have paid all taxes on 1,000 acres of aspen, fir, spruce and pine trees. An additional 100 cords of pulpwood, harvested annually, has added a profit of about $1,600.

In the prairie states of North and South Dakota, shelterbelt trees have sliced as much as $800 off livestock feed bills by protecting against winter winds. Studies have shown farmstead shelterbelts can chop 30% off winter fuel requirements—a saving of at least $50 per winter for the average home.

Money does grow on trees.

Quentin Daigle, Itasca County, Minnesota, harvested $513.40 worth of logs and pulp from a 20-acre field of pine in May, 1951. In the fall of 1952 he took $687 more. This winter he will make $320.

How? By farming his trees as he would a field of grain. By planting, where necessary, by

Reprinted by permission from The Farmer, St. Paul, Minnesota

cutting competing weed trees, by protecting his trees against fires and livestock as he would a field of corn, and last, by harvesting when his trees are ripe. Oats will go down if not cut at the proper time. So will trees, if not physically, at least in quality.

Gerald Schleif, Hennepin County, Minnesota, averaged $8.78 per hour for his work in his woodlot last winter. He follows those practices.

Roy Halvorson, Duluth, "Mr. Christmas Tree," tied timber cropping to modern merchandising to build the green of yuletide into a good sized income business. He has cut 11,000,000 Christmas trees in the past 30-odd years and reaped the praise of conservationists while doing it.

Walter Schmidt, Wright County, has harvested 8,000 board feet of sawlogs, 60 cords of fuel wood, and 300 gallons of maple syrup from an 84-acre woodlot each of the last 10 years for an annual gross income of more than $3,000. And his 86 acres are in better shape now than they were when he started.

These men plant, protect and harvest. They are Tree Farmers, members of a forest rebuilding program which now embraces 40 of the 48 United States.

The American Tree Farm system had its beginning in the State of Washington in 1941. Minnesota joined January 1, 1950, when 59.9 acres of Isanti County white pine belonging to William K. Berger were certified as Minnesota Tree Farm No. 1. Three hundred and three additional farms, totaling 281,916 acres have been certified in the four years since.

On a national scale, 4,480 tree farmers have dedicated 28,433,221 acres to "continuous growth of forest crops for commercial purposes." Ten farms totaling 628,127 acres are under the program in Wisconsin. North Dakota, where the first tree farmer was signed up in 1949, has 38,290 acres being cropped under approved tree farm methods. South Dakota has 1,393 acres.

What Berger and the others did to become tree farmers was this: they contacted their state forester, usually by letter, stating their desire to join. They backed up that desire by agreeing to (1) protect their timber from fires, (2) follow approved forest practices to assure continuous production of commercial timber crops and (3) eliminate grazing in woodlots.

"Less than 25% of the total acreage in Minnesota is now being properly managed," says Floyd Ryan, executive director of Keep Minnesota Green, one of the organizations sponsoring the state Tree Farm system. "Elimination of grazing and stand depletion, selective cut-

ting, and reseeding where necessary, could double production on those 5,000,000 acres."

Such an increase could have considerable impact. Forest products still contribute the

tion, taking off harvestable trees, then building up the land, where suitable, for grazing. Cattle will benefit from the shade. And the fenced-off woodlot will more than make up for the area converted. "You can raise more timber on 10 acres not grazed than on 20 acres that are," he points out.

As to other management, the weeding out of low-quality, undesirable trees can do much to speed the flow of dollars from faster growing timber. Thinning of stands will aid growth. Removal of "wolf" trees, those with knots and thick, twisted branches will help. So will cutting inferior species which may be over-topping young pines so crowns are knocked out of the

own benefit. Prairie shelter-belts, planted with the right mixture of fast and slower growing species, will start reducing fuel and feed bills in four to six years.

A planting of Norway seedlings, put in during CCC days, made a 22-foot growth in 13 years. Boys in the Cass Lake district of the Chippewa National Forest cut 600 fence posts per acre from that planting. In a few more years the area will be ready for thinning again, this time with small telephones poles coming out. Later on there will

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ting, and reseeding where necessary, could double production on those 5,000,000 acres."

Such an increase could have considerable impact. Forest products still contribute the third largest income in Minnesota—$162,000,000 last year. And demand for wood and its by-products is greater today than ever before.

In management, keeping livestock out of timber is the most important. Emil Kukachka, supervisor of the private forest management service for the Minnesota Division of Forestry, considers it his No. 1 headache. "Turn the cows in and you ruin quality," he points out. "One bite from the top of a new seedling by a grazing animal, and you've lost a year's growth."

If part of the wooded acreage is needed for pasture, Kukachka recommends fencing off a section, taking off harvestable trees, then building up the land, where suitable, for grazing. Cattle will benefit from the shade. And the fenced-off woodlot will more than make up for the area converted. "You can raise more timber on 10 acres not grazed than on 20 acres that are," he points out.

As to other management, the weeding out of low-quality, undesirable trees can do much to speed the flow of dollars from faster growing timber. Thinning of stands will aid growth. Removal of "wolf" trees, those with knots and thick, twisted branches will help. So will cutting inferior species which may be over-topping young pines so crowns are knocked out of the more valuable trees as they grow.

"Proper management through improvement and liberation cuttings, and harvesting of trees as they become mature can step up growth in the average woodlot from two-tenths of a cord per acre per year to half a cord per acre per year. Studies have proved that," says Floyd Colburn, State Agricultural Extension Service Forester for Itasca County.

Tangible returns from new plantings are not a two-generation proposition, either. You needn't feel you are planting trees for coming generations alone. You can plant for your own benefit. Prairie shelter-belts, planted with the right mixture of fast and slower growing species, will start reducing fuel and feed bills in four to six years.

A planting of Norway seedlings, put in during CCC days, made a 22-foot growth in 13 years. Boys in the Cass Lake district of the Chippewa National Forest cut 600 fence posts per acre from that planting. In a few more years the area will be ready for thinning again, this time with small telephones poles coming out. Later on there will

be saw logs and high-priced bridge pilings.

So, you can make money from trees. It may not be $8.78 per hour, but it can well be $1 or $2. Many who have kept accurate labor records have earned 75c to $10 per hour in the woodlot.

* * *

About 45 per cent of the corn raised in this country is fed to hogs.

* * *

Public and private foresters are eager to give help on woodlot management and marketing problems. Advice and specific recommendations are available from state foresters, Extension Service foresters, forest product industries representatives, state Keep Forests Green committees, railroad foresters and others.

Industry needs timber. More and more wood products are being uncovered. More than 1,100 by-products have now been derived through chemistry. New machinery, new products and new wood uses are constantly appearing to enhance the woodlot owner's rosy future.

Chipping machines will now chew up brush, slash and waste. A Twin City company is buying such shreds for use in roofing materials. Wood chips make excellent bedding for livestock and poultry. Sawdust is being used in a soil conditioner.

Blueprints for kilns to make charcoal of tree tops and slabs have been perfected. One Twin City outlet will buy 200 tons of charcoal per year.

Fence post drivers are producing good custom-work income for some operators. A small fence post treating unit is also available for custom operators.

Debarking compounds, applied in the spring, will knock bark off popples by fall. And pealed popple is worth $20 per single cord to some pulp-producing companies.

New in the woodlot improvement picture is a Forest Credit law. Through it banks may make loans on managed forest property, using timber as collateral.

GOOD NEWS — Bloat can be prevented now, according to Dr. R. E. Nichols of the University of Wisconsin Veterinary staff. Research studies just completed show that synthetic detergents and surface-active agents now help to control bloat. Some of the cooperating farmers fed the detergent with loose salt—1 part detergent to 4 parts salt—with satisfactory results. Although commercial detergent preparations are expected to be on the market next year, common household detergents may do the job just as well and probably cheaper, Dr. Nichols said.

Here's An All-Grass Rotation

"It makes money for us," say the Calls . . .

Condensed from The Ohio Farmer

Ralph L. Hamilton

A ROTATION that's all grass? Impractical? No—it's both practical and profitable, thinks Howard Call of Summit County, Ohio. Call starts by saying that you must grow the crops that are best suited to your farm. His farm is sloping and he thinks that grass is best for it.

About 75 per cent or 130 acres of the Call farm is in either permanent or rotation pasture all the time. The remainder is woodlot, farmstead, nurse crops and an annual planting of six to eight acres of hybrid seed corn. Permanent pasture is a small part of the total with 15 acres.

Call, who farms in a carefully worked-out partnership with his son, wants all the grass he can grow all the time. Any legume pasture must be reseeded after a period of time to maintain top production. Reseeding usually means breaking the ground for a grain crop and following with a nurse crop for the seeding. This procedure often involves a year or more and the planting of a row or small-grain crop.

The Calls avoid row crops by reseeding directly to a meadow mixture. They plow the old sod during the winter for a spring seeding of oats. The meadow mixture is band seeded with the oats. They sow some wheat for certified sale but prefer oats as the nurse crop for the new meadow. The mixture is an alfalfa—bromegrass—red clover—Ladino combination.

Reprinted by permission from the Ohio Farmer, Cleveland, Ohio

Starting about 10 years ago, Howard began the all-pasture rotation. This was part of the long-range rebuilding program which he started in 1928. At that time he took over complete operation of the farm which has been in the Call family for more than 150 years. Some 40 acres were cultivated then and the farm was not in the best state of productivity.

The Calls are quick to say that a good fertilizer program is an essential part of this pasture setup. Extended use of grass as in this program rapidly depletes the potash supply. Good hay crops often remove two or three times as much potash as grain crops.

A top-notch source of potash is manure. The Calls' herd of 35 Holsteins provide enough to cover all the new seedings with six to seven loads per acre. A special effort is made to spread the manure every day. Ground corncobs are used in the gutters to absorb the liquid manure and Howard Call says: "For the first time we are getting everything back on the land."

The commercial fertilizer program starts with 500 to 600 pounds of 3-12-12 applied with the oats. Second-year meadow will now get 200 pounds of muriate of potash and superphosphate with the manure.

With all this grass available, the Calls go a step further and make good use of it. There's no point in following such a program if it is not profitable. Evidence is the herd average of about 500 pounds of fat and 14,000 pounds of milk on owner-sampler testing.

The Calls make it a "must" to get their grass silage made before June 1. This young unheaded grass makes a silage of 15 per cent protein. With this high-protein silage, they feed a corn-oats mixture that contains about 50 pounds of high-protein concentrate per 750 pounds.

Their pasture program is equally well thought out. All the pasture is divided into three-acre strips by electric fencing. The herd is split into two groups and graze on these strips until the milk flow just barely dips. As soon as this dip shows up on the milk sheet, the cows are shifted to a new strip. About four strips are enough to make the round until the first strip regains its growth.

This pasture rotation provides more than enough hay in addition to grass silage. Each year some is sold as a cash crop. All hay for home use is mowed loose and dried mechanically, as is all grain. The same set of fans do the job for hay and oats. Like grass silage, hay is made early to insure high quality.

New Methionine Brings Faster Growth and Better Feathering in Broilers

Texas tests show that one-half to one pound per ton of feed gives good results . . .

Condensed from Poultry Tribune

Dr. J. R. Couch, TEXAS A AND M COLLEGE

● RESULTS of experiments at the Texas Agricultural Experiment Station shows that good results can be obtained by feeding methionine (an amino acid) in broiler feeds.

Industrial developments during the past five to seven years have made it possible for chemical companies to offer feed grade methionine at a low enough price so that it can be used in feeds for broilers and in starting and growing chick feeds.

The levels of methionine which were used in the Texas tests varied from as little as one-quarter of a pound per ton of finished feed to as much as five pounds of feed grade methionine per ton. Levels of one-half pound to one pound per ton have produced best and most consistent results in broiler feeds.

The type of litter appears to have an effect on the response to the methionine. The addition of methionine to broiler feeds has produced a significant increase in the growth of the birds at ten weeks of age. The increase in growth varied from 3 percent to as much as 10 percent.

It is estimated that the broiler producer can obtain from 15 to 30 pounds of additional broilers from each ton of feed if the feed contains from one-half to one pound of methionine per ton. This data is based on the improvement in feed efficiency alone. An additional benefit from adding the methionine can be obtained

Reprinted by permission from the Poultry Tribune, Mt. Morris, Ill.

through an increase in growth of the birds.

Best results are obtained by feeding the methionine in the presence of fish meal or fish solubles. This is an unusual observation since it is a recognized fact that both fish meal and/or fish solubles contain considerable methionine.

An effect has been demonstrated on feathering by adding the methionine to broiler feeds, especially during hot weather. The problem of "barebacks" is usually greatest in the late spring and persists throughout the summer into the early fall months.

In one test under field conditions, the feathering of birds was improved by about 25 percent by the addition of one pound of this amino acid per ton of finished feed. These results were obtained with New Hampshire chicks during the hot summer of 1951.

In tests with Delaware-New Hampshire cross chicks, the birds not fed the methionine were almost completely barebacked. But the addition of one pound of methionine per ton of feed produced normal feathering.

* * *

Movement of feeder cattle into nine corn belt states from July 1 through October was almost a fourth less than a year earlier.

* * *

On the basis of studies which have been conducted, it is apparent that significant results will be obtained by the addition of one-half to one pound of feed grade methionine. Somewhat better results may be produced by the use of one pound per ton in broiler and starter feeds. However, the results from the addition of one pound may not always be significantly better than those from only one-half pound per ton used in manufactured feed.

The effect on feathering alone justifies the use of the amino acid, particularly during the periods when feathering problems are encountered.

A consistent improvement in feed efficiency has resulted from the use of methionnine in broiler and starter feeds.

First four months of a cow's lactation may be taken as a fairly accurate indication of what she will produce in ten months, advise Purdue University extension dairy specialists. Production in the first 120 days should be at least one-half of the cow's anticipated yield; otherwise she should be sold and the feed marketed in a more profitable manner. In other words, a cow with less than 3,500 pounds of milk to her credit at the end of the first four months is unlikely to give 7,000 pounds in ten months time.

YOU CAN LICK THESE ALFALFA PESTS

Odds are that one of these thieving bugs is cutting your forage yields . . .

Condensed from Capper's Farmer

W. W. Franklin

ALFALFA yields can be boosted. Cultural practices—good seedbed preparation, proper fertilizing, seeding best varieties, cuttings timed to maintain stands—all bring bigger crops.

One yield booster often neglected is control of insects. Hundreds of species of bugs feed on alfalfa. Only a few consistently cause serious harm.

The six most destructive bug pests are discussed here. Not all are nation-wide threats. Spittlebugs, for example, attack alfalfa primarily in the north central states while pea aphids strike hardest in the western part of the country.

Pea Aphid

This bug is one of the most damaging pests on first cutting. It often sets back growth 1 to 3 weeks. Sometimes it migrates from alfalfa to canning peas, or from peas to alfalfa.

Heavily infested alfalfa appears to wilt from lack of moisture. As feeding continues the aphids excrete great quantities of honeydew. Bronze patches appear in fields. Plants at the Fort Hays Experiment Station, Kansas, had started to turn pale and brown when sprays were applied in late April.

Six chemicals gave better than 90 percent control in both 1952 and 1953. They were EPN at 8 ounces an acre, DDT at 2 pounds, systox at 1 pound, parathion at 4 ounces, metacide at 4 ounces, endrin at 4 ounces. Treatment gave an extra ton of hay an acre.

In general, EPN, metacide, parathion, and systox should be applied only by operators familiar with the risks involved.

Reprinted by permission from Capper's Farmer, Topeka, Kansas

A seventh chemical, methoxychlor, boosted yield only 50 percent, but gave fair aphid control. This chemical is nearly harmless to humans and warmblooded animals. It presents no residue problem. The other chemicals mentioned above should be applied early in the growth stage to give residues time to disappear before cutting.

In Ohio and Indiana pea aphid has been well controlled with lindane or BHC. Often, with 4 to 8 ounces actual lindane an acre you control spittlebugs and aphids at the same time.

Pea aphids stole a lot of red clover and alfalfa in Iowa in 1953. They were particularly harmful where they were associated with clover leaf weevil.

Iowa recommendations for control are 1½ pounds of actual DDT an acre or 5 ounces actual lindane if temperatures are above 60 degrees.

Spittlebug

This pest is on the increase. Declining hay yields in many areas can be traced to this invader. Spittlebugs cause damage by extracting plant sap to provide a protective mass of spittle around the larvae.

The spittlebug deposits eggs in hay fields in the fall. Laying begins late in August and reaches a peak early in September. In spring the eggs hatch and larvae reach the adult stage in about 45 days. First adults appear the last of May and remain until cold weather.

Entomologists at Ohio Experiment Station have worked out a system so you can tell in the fall if it will pay to spray the spring. Best time to make this field check is the second week in September, tho it can be made anytime during the month.

You make 100 sweeps with an ordinary 15-inch insect net and count the spittlebugs you capture. If you pick up fewer than 50 spittlebugs in 100 sweeps, spraying the next spring will not pay. If you get 50 to 100, spraying will be of doubtful value. But if you get 100 or more, spraying will pay.

Control of spittlebugs has increased hay yields more than one half. In dry years, hay yields can be more than doubled by spraying.

Fall spraying has given ½- to 1-ton increases in hay the following spring.

There is another important benefit from control, too. Hay has shown a 19 to 23 percent jump in carotene and a 5 to 8 percent increase in protein.

In Ohio, BHC, at 3 ounces an acre, has given 100 percent control. Toxaphene, at 1½ pounds an acre, also had excellent effects. In some tests al-

drin killed 98 percent of the bugs.

Entomologists in New York found BHC and dieldrin a little better at low concentrations. Toxaphene, metachlor, chlordane, and heptachlor were good.

In Wisconsin toxaphene, parathion, and methoxychlor gave excellent control. Chlordane and BHC did well.

In Indiana during the serious armyworm invasion last year, several users of methoxychlor reported control of the armyworms was a second dividend from spittlebug spraying. Methoxychlor applied up to a week before harvest does not leave a harmful residue.

Lygus Bugs

Several species of lygus bugs cause severe damage thruout the United States. They are especially harmful to alfalfa seed crops, and reduce hay yields severely. They feed on the flower and leaf buds and growing tips of the plant.

One of the best control measures for this pest is 2 pounds of actual DDT an acre. This is one of the few control recommendations that applies over the entire United States. DDT should be applied during early growth of the alfalfa to avoid harmful residue on hay.

Leafhoppers

Fortunately the potato leafhopper is easily controlled. One pound actual DDT an acre will give 95 to 100 percent control, but if you use 2 pounds you'll get a longer lasting effect for the late hatch.

Methoxychlor eliminates the residue problem of DDT. Ohio has found ½ to 1 pound of actual methoxychlor an acre (1 to 2 quarts of the 25 percent liquid) does the job. Parathion is a leafhopper killer too, but more dangerous to humans and livestock.

In a Wisconsin demonstration in Outagamie county, 160 bales of alfalfa were cut from a 4-acre check plot while leafhopper control with methoxychlor gave 220 bales from a similar strip.

The leafhopper overwinters in the Gulf states and is given to mass migrations. Serious outbreaks in northern states are in some way correlated with heavy infestations hundreds of miles to the south. A co-operative project in 13 states is underway to learn more about these mass migrations.

The leafhopper also transmits some serious legume diseases.

Garden Webworm

This pest is widely distributed over the whole country but most serious west of the Mississippi. It, too, flies into the Midwest from southern states.

Adults are rarely seen unless they are disturbed. As you walk

thru the field you may see them fly up ahead of you for 10 to 30 feet and then drop down to seek shelter on the underside of a leaf. You may have seen light webs of "silk" tying the leaves of main branches and lateral branches into small compact enclosures. These webs are made by the webworm during the caterpillar stage.

The number of generations a year is almost perfectly in time with the number of cuttings of alfalfa. It is not known how this pest overwinters.

Each of these chemicals has given effective and profitable control: DDT, toxaphene, dieldrin, metacide, methoxychlor, parathion.

In large areas of Oklahoma, Nebraska, and Kansas, treatment has insured good hay yields while cuttings from untreated portions of fields have been a total loss.

Grasshopper

This glutton doesn't restrict himself to alfalfa. Few if any insects can cause greater direct loss of crops than the several species of grasshopper.

You can expect heavy damage from 14 to 28 grasshoppers per square yard. With 28 or more grasshoppers a square yard complete destruction of crops is possible.

Grasshoppers hatch out in egg "beds" so for a short time the young are concentrated in a small area. That's the time to poison them. Later, after they migrate to crop fields they do their damage and are much harder to control.

Because of residue you should treat a field about a month before cutting the hay. So, if the hay is nearly ready to mow when you notice a 'hopper invasion, your best bet is to cut the alfalfa as soon as possible.

After the hay is removed treat with aldrin at 2 ounces an acre. Chlordane or toxaphene can be used. Treatment will prevent grasshopper damage to the next cutting. Under dry, late summer and fall conditions, dieldrin has more staying power than aldrin.

Of course, if you have located and killed the young in the hatching beds around the field borders you have licked the 'hoppers before they can get started.

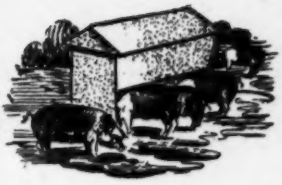
Alfalfa Weevil

There is a host of other bugs which cut your hay yields. For example, control of alfalfa weevil with dieldrin at 4 ounces an acre has increased alfalfa yields a ton an acre.

The important thing is to be alert to control any insect outbreak. It pays.

Note: It is imperative that you observe precautions for safety in working with any of the chemicals mentioned in this article. The department of entomology at your state college will give directions for use of insecticides.

15 Recommendations for Making Money with Hogs



For growing and fattening swine from weaning to marketing, here are suggestions the experts agree on . . .

Condensed from Hog Breeder

ADEQUATE safeguards to insure that the maximum number of pigs are saved per litter is only the first step on the road to greater hog profits.

Sound and thorough management must be employed all along the line until hogs are marketed if low cost, efficient production is to result in the highest net profits.

In an effort to bring more uniformity in management recommendations for the growing and fattening of swine from weaning to market age, the Nutrition Council of the American Feed Manufacturers Association carried on a long intensive study of all available research data. The following fifteen recommendations are the result of a survey of all land grant colleges, experiment stations, the U. S. Department of Agriculture, feed manufacturing companies and other interested parties.

Feeding Management

1. The number of pigs per linear foot of self-feeder space or pigs per self-feeder hole should be:

	On Drylot	On Pasture
Weaning to 75 lbs.	4	4-5
76 lbs. to market	3	3-4

(A ten-foot self-feeder open to pigs on both sides provides 20 linear feet of feeding space.)

2. The percentage of self-feeder space given to protein supplement should be:

	On Drylot	On Pasture
Weaning to 75 lbs.	25%	20-25%
76 lbs. to 125 lbs.	20%	15-20%
126 lbs. to Market	15%	10-15%

3. Three self-feeder holes, or three linear feet of mineral box space, should be allotted for 100 pigs when salt or a mineral mixture is fed free-choice.

4. For hand feeding in troughs, or for hand watering,

Reprinted by permission from Hog Breeder, Chicago, Illinois

the length of the trough per pig should be:

Weaning to 75 lbs.	.75 ft.
76 lbs. to 125 lbs.	1.00 ft.
126 lbs. to Market	1.25 ft.

(A ten-foot trough is considered to provide ten feet of feeder space whether pigs eat from one side or both sides.)

5. When pigs are confined from weaning to market, 15 sq. ft. of feeding floor space should be provided per pig if the pigs are fed from troughs and 10 sq. ft. of feeding floor space if fed from self-feeders. This is in addition to sleeping space.

* * *

An actuary has computed that a person at 70 will have eaten about 150 head of cattle, 225 lambs, 20 sheep, 310 swine, 2,400 chickens, 25 acres of grain, and 50 acres of fruits and vegetables.

* * *

6. One automatic watering cup should be provided each 20 pigs. (An automatic waterer with 2 openings should be considered 2 cups.)

7. The minimum capacity waterer for 10 pigs per day should be 25 gallons in the summer time and 15 gallons in the winter time.

8. The drinking water should not fall below a temperature of 35 to 40 degrees Fahrenheit during the winter.

General Management

9. The area of shelter provided should be:

	Summer Time (Shade or Housing)	Winter Time (Housing)
Weaning to 75 lbs.	7 sq. ft.	6 sq. ft.
76 lbs. to 125 lbs.	9 sq. ft.	8 sq. ft.
126 lbs. to Market	12 sq. ft	10 sq. ft.

10. The use of sanitary hog wallows during hot weather is recommended. Up to 50 pigs can be accommodated per 100 sq. ft. of wallow providing shade or shelter is near-by.

11. Ringing of pigs is recommended where rooting becomes a problem.

12. A program of strict sanitation to prevent infestation is recommended for control of worms in swine. Where such a program is not effectively carried out, worming of pigs soon after weaning, and repeated later if needed, is recommended.

13. Effective mange and lice treatment is recommended at weaning and whenever needed thereafter.

14. On good legume or legume-grass pasture allow 20 growing-fattening pigs per acre on a full feeding program and 10 to 15 per acre on a limited-feeding program.

15. Pigs of widely varying weights should not be run together. It is recommended that the range in weight should not exceed 20% above or below the average.

DEEP PLOWING May Be For You

Bring heavier soils to the surface and increase the productivity of your farm . . .

Condensed from Acco Press

IF YOUR FARM is too sandy, turn it upside down! Deep-plowing increases sandy land productivity by bringing heavier soils to the surface. You stand a better chance for a winter cover crop where you have deep-plowed. You keep the soil you have, and add fertility and organic matter to it.

Plowing deep, down 20 to 24 inches, seems to be the key to unlock top production on sandy soil. What does this do? The experts figure your soil is fairly safe from blowing if you can get eight to 10 per cent clay in the topsoil.

At Oklahoma's Sandy Land Experiment Station tests showed only one area out of 27 with 10 percent clay in the topsoil before plowing.

After deep-plowing, nine more of these test plots had above 10 percent clay; another nine had been changed to loamy sand and the other eight were greatly improved but not up to the 10 percent mark.

The Sandy Land Station got half a bale of cotton an acre on deep-plowed land after 1952's scorching summer. There was nothing, not even a good crop of stems, on strips not deep-plowed.

Deep-plowing works on irrigated lands as well as dry farms. And it isn't restricted to the cotton belt.

In Texas, fields plowed seven years ago still haven't blown. Sometimes the main purpose is to stop blowing in grain sorghum and wheat lands.

Wheat farmers in the southwest corner of Kansas took the idea after they saw results of deep-plowing. In the midst of some rough dust storms, fields deep-plowed last winter "stood out like a sore thumb." These fields weren't blowing, but they were catching a lot of sand blowing, but they were catching a lot of sand blown off listed fields.

Yields are boosted as many will testify. The boys with the lead pencils figure that 3,000 acres of deep-plowing in Har-

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mon County, Oklahoma, last year produced an extra $100,000. In fact, this land was about the only place there was any cotton, except on irrigated farms.

Thomas Cunningham, superintendent of the Sandy Land Station, says the mechanical effects of deep-plowing will last from 50 to 500 years—if you take care of your new soil. Bumper crops are the rule for two or three years, but yield increases wear off after about three years.

There are other reasons why farmers want to deep-plow. It soon pays for itself in weed control alone. Surface weeds are buried, but weeds will later invade the land again just as they will invade any farm.

But deep-plowing isn't a cure all. You have to take care of the land. That's where other practices come in, such as planting cover crops and growing legumes.

Determine Level of Protein Needed In Broiler Rations

Related experiments conducted at the United States Department of Agriculture's Beltsville, Md., research center and at the University of Maryland indicate that broilers between 6 weeks and 10 weeks of age gain weight most efficiently on rations containing 18 or 19 per cent protein. Birds younger than 6 weeks require between 20 and 22 per cent protein for most rapid growth and development, but after 6 to 8 weeks gains are equally rapid on the lower-protein ration.

On the other hand, broilers placed on a 16-per cent protein ration at 6 or 8 weeks failed to gain as well as those on a ration containing 19 per cent protein, indicating that 16 per cent is an inadequate protein level in the 6- to 10-week growth period.

The protein level in broiler rations can be reduced, say USDA poultry specialists, by feeding grains, by feeding low-protein finishing pellets, or by using a lower protein all-mash system. Of these methods, the use of a lower protein all-mash system is the easiest and the most foolproof. The extra work involved in feeding pellets or grain and the chance of reducing protein too much may offset the savings to be realized through the use of a lower protein ration.

The birds used in the USDA-University of Maryland experiments were a fast-growing, rapid-feathering strain of New Hampshire.

U.S.D.A.

Balanced Farming WINS!

19,000 Missouri farmers have plans to help them weather any storm. . .

Condensed from The Hereford Journal

R. R. Thomasson

A BALANCED farming plan including a herd of cattle is a combination that is spelling success on Missouri farms. The case of Alvin Huffs of Jasper County is typical.

The main cash enterprise in his balanced farming operations is a registered herd of 30 Hereford cows and 10 heifers. This year he produced a 100 percent calf crop which averaged 525 pounds at weaning time. He has stepped up his production through a farm water management system and through improving his cropping system. His crop production practices this year included 10 acres of alfalfa in addition to sweet clover which he has been growing for a number of years. He plowed under 30 acres of green manure along with a heavy application of rock phosphate. The 12 acres of permanent pasture that he renovated this year will make it even easier in future years to maintain that average weight of 525 pounds at weaning time.

The increased income on Mr. Huffs place has had its influence in the home as well as on the farm. The home has been completely remodeled with a fireplace added, ceilings lowered, pressure water system installed, bath added, and the kitchen modernized. On the farm side a new machine shed, poultry house, garage, two cattle sheds, additional sheds on the side of the barn, a silo, and granary were added. That is not a bad record when we con-

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sider that the main cash income, as indicated above, comes from a herd of 30 Hereford cows.

"What is balanced farming?" is a question frequently asked. J. W. Burch, director of the agricultural extension service, University of Missouri, answers the question in these words:

"It is a program in which each farm family can analyze resources available and develop a system for more profitable farming and family living. In developing the plan that best fits their farm and their home, each family with the technical assistance of the extension agents plans how to fit the best-known farming practices recommended by the college of agriculture together so as to get the greatest net income while improving the soil and other farm resources. This involves striking a positive balance—between many items — between available labor and labor needs, between soil fertility added and that removed by crops and erosion, between pasture and livestock, and between income and expenditures—just to mention a few."

Applying these principles, the John Heidbrink family of Lafayette County had some rather outstanding results. Two years ago a field on the Heidbrink farm was growing little more than hedge brush and saplings and was cut through with gullies. Renovated and terraced, this 27-acre field last year produced 400 pounds of beef an acre. The field was seeded to a mixture containing eight pounds of alfalfa, eight pounds of brome, three pounds of timothy and one pound of Ladino per acre. Two different soil treatments were used. Seven acres received 2½ tons of lime per acre plus 500 pounds of 20 percent super phosphate, 100 pounds of 4-24-12 and 100 pounds of ammonium nitrate. The other 20 acres got 1,000 pounds of rock phosphate, 175 pounds of muriate of potash, 175 pounds of muriate of potash, 100 pounds of 4-24-12 and 100 pounds of ammonium nitrate.

Soil treatment on the Heidbrink farm has been an expensive proposition costing as much as $65 an acre. However, the farm had been rented until it was almost worthless before the renovating program started. In fact, the rental got as low as $250. Considering the fact that Heidbrink has obtained an income of as high as $150 worth of beef per acre, the cost does not appear to be exorbitant.

Results of this kind do not come by day dreaming or settling down a few plans on paper. It takes planning plus good

farm management. Farm management specialists at the Missouri college of agriculture have listed four principles of profitable farm operation which any farmer might well consider in sizing up his own operation. These are:

1. Is yours a good-sized business? You have certain costs that remain the same no matter how much you produce. When you increase production, or volume, you get more for your money.

2. Production rates must be high. It takes about 10 bushels of corn or 15 bushels of wheat to pay the labor and equipment costs for the crop. This is true no matter whether your yields are 10 bushels or 50 per acre. In other words, the higher your production, the less is the unit cost.

3. In planning your operations, consider seasonal prices. The same pig may bring you 10 percent more if marketed before the rush of hogs puts the market down. The cost will be the same no matter when you sell it.
down. The cost will be the same no matter when you sell it.

4. Make good use of land, labor, and equipment. If you have a lot of money tied up in equipment, you must have enough use for it so it will pay for itself. The labor supply must be in profitable use the year around.

Jerry Hedricks utilizes all phases of good farm management to the fullest extent on his Dent County farm where his balanced farming plan includes 30 registered Polled Hereford cows. This year he weaned 29 calves from these cows at an average weight of 525 pounds. He got a 400 pound gain on steer calves wintered on hay and grazed through the summer with a light grain ration. He is in the process of liming and fertilizing his farm. This year he renovated 35 acres of permanent pasture and has 7,600 feet of terraces constructed.

Corn on the Hedricks farm averages 75 bushels to the acre. As is usually the case on farms operating under a balanced farming plan, the Hedricks are utilizing their increased income for improvements on the farm. These included last year a machine shed, new appliances, farm machinery, and replacement breeding stock.

In commenting on the balanced farming system of operation, Dean Emeritus M. F. Miller of the college of agriculture, says:

"Every completely successful farm is a concrete example of balanced farming. It embraces a

complete system of soil improvement and conservation, a cropping and pasture plan perfectly suited to the farm and the animals kept on it, with provision for a modern farm home. It embraces a rational system of farm management which provides good economical returns and those satisfactions and opportunities associated with gracious country living.

"A few of Missouri's best farmers have long followed the equivalent of balanced farming and under the guidance of the agricultural extension service, an attempt is being made to bring every good farmer into this class. More than 19,000 farmers have developed such plans and are putting them into operation. While this is less than 10 percent of the farmers of the state, these men are setting examples for others."

Paul Klocke of Knox County is one of those individuals who has been setting the pace for other farmers with his balanced farming plan since 1947. Mr. Klocke has 50 of his 190 acres in a two-year rotation of corn, oats, and sweet clover. Another 50 acres is in wheat and red clover. About 30 acres of permanent pasture has been renovated. He has been doing this renovation year by year. He has 15 Hereford cows and plans to expand to 25 and cut his ewes from 85 to 50. He also keeps eight sows. This year he used 99 tons of fertilizer and plowed down 57 acres of green manure. He has boosted his yields to the point where he expects 100-bushel yields. This year he only made 90 bushels, but the year before it averaged 104. To get these yields, he has been testing the soil regularly and has followed soil test recommendations closely.

With the squeeze between the high cost of things that are to be bought and the lower price of farm products, Mr. Klocke is in a position to stay in business long after the majority of others have begun to lose money. His balanced farming program has given him and his family the maximum security that can be expected from top farm management.

Much of the savings on the Klocke farm are used in making the farm and home a better place to live, and in providing greater security for the family.

William Boettcher, Gasconade County, won a balanced farming award by demonstrating how thin land can be made to pay. Key to the success on the Boettcher farm is a beef cattle herd of 55 Hereford cows and 116 acres of improved permanent pasture. Much of his 432 acres of crop land was re-

ferred to as worn out when he started the balanced farming operations. A well-planned soil fertility program has changed this.

* * *

United States sheep and lamb feeders are fattening fewer animals for winter and spring markets than a year ago.

* * *

Through a good management program the Boettchers have increased their weaning weight of calves from 416 pounds on Nov. 4, 1948, to an average of 511 pounds on Oct. 12, 1952. In other words, they have increased the selling weight of their calves by almost 100 pounds a head for 55 head. The program which brought this about included early calving (February 1), a good pasture and feeding program, the use of good registered bulls, and individual cow records. Three permanent silos are used for storing high-quality roughage. Soil treatments during the past three years include 416 tons of limestone, 124 tons of rock phospate, 78 tons of mixed fertilizer, and 13½ tons of ammonium nitrate.

These experiences fall in line with the results obtained at the Missouri agricultural experiment station. There land that had been so severely eroded when the university bought it in the 1930's that it would have been classed as 10- to 15-bushel corn land made 335 pounds of beef per acre in 1951 from tall fescue-Ladino pasture.

There is ample evidence on innumerable farms throughout the state that the man following a good balanced farming plan with good farm management, running a herd of good quality cows on improved pasture, and utilizing and following a soil-fertility program to increase yields of all crops for more efficient production, will be able to weather any economic storm that may develop long after the average individual has gone under.

U. S. Heavy Producer of Soybeans—The United States now competes with China and Manchuria as one of the world's principal producers of soybeans, a crop native to eastern Asia. According to historical records, the Chinese have been using soybean products for more than 3,000 years. One of the oldest Chinese products, soy sauce, has become an important condiment here; most Worcestershire sauces, for example, contain from 10 to 30 per cent soy sauce. Other more important United States products include soybean oil, soybean-oil meal for animal feeds, and soybean flour.

Bloat Can Kill Your Cattle

But you can use lush pastures with less risk if you follow these suggestions . . .

Condensed from Eastern States Cooperator

BLOAT is a cow-killer today just as it was in your grandfather's time—and scientists and expert cattlemen are still confused as to exactly why it happens and what to do about it.

When scientists attempt to study the causes of bloat, they run into so many variables that their conclusions ride off in all directions and end nowhere in particular. In order to be sure we know what causes bloat, we must have a recipe for bloating that will turn a cow into a balloon every time. No such recipe exists—but scientists can point to a few that are pretty good. S. W. Mead of the University of California says that the best recipe he knows for causing bloat is to deprive cows of hay for two or three days, then turn them into a pure, thick stand of immature alfalfa about eight to 14 inches tall. Even so, only about two cows out of three will bloat. Some cows seem to have a built-in burping ability and they never bloat. That's merely one of the disturbing problems the scientific bloat-maker must put up with.

Bloat researchers accumulate a lot of interesting observations; most of them not very consoling to cow owners. For instance, bloating rarely occurs until cows have grazed a bloat-producing pasture for about an hour and a half. But give 'em two hours longer and probably two out of three may be distressed.

While it has not been nailed down to any exact rule, all the bloat experts seem to agree that the most likely way to avoid bloat is to be certain that cows consume considerable coarse forage before or while they graze dangerous pasture. They say that when this precaution is taken, they can't make a cow bloat . . . and they've tried hard, too.

Where many farmers fail to keep their herds in the safe zone is in respect to that word "considerable" applied to the coarse hay or pasturage required to offset the risk of bloat on tender, luscious clover and alfalfa stands. Various booby traps oc-

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cur without farmers being aware of them. For example, some have offered their cows hay in the barn all right—but it was such coarse, stemmy or musty stuff that four or five pounds of it was all a cow would eat . . . especially with her mind on a field of six-inch ladino! Somewhere around 15 pounds of attractive hay is needed. But another booby trap just as dangerous is the legume hay that's so leafy and fine-stemmed that it's almost as contributive to bloat as the dangerous kind of pasture.

Farmers have lost cows from bloat while a rack of hay reposed at one end of their pasture. The booby trap here was in the walk, too long a walk, from lush pasture to hay rack. Placing a portable hay rack in the center of the pasture solved this one.

Wild cherry gets blamed for many cases of bloat. There's deadly prussic acid in wild cherry leaves—a lot of it when conditions are just right—and this poisons the cow that tries to offset her lush pasture with browsing on some coarse forage the way nature tells her to do. All dead cows bloat within a few hours. For safety's sake, get rid of the cherry bushes and supply a better kind of roughage.

The unclipped grass-and-legume pasture, the real good pasture, is a booby trap, too. What can happen here is that patches of grass become too mature and are not grazed. Other patches of legumes, especially ladino or alfalfa, are grazed close frequently and thus kept in their most d a n g e r o u s condition. Even though the spots of coarse, mature grass offer the means for offsetting the bloat-producing legumes, cows can't or won't eat enough of it to protect themselves from the highly dangerous clover or alfalfa. Remember a cow needs about 15 pounds of hay a day to be safe on a bloat-producing pasture. She'd need a power mower on her muzzle to harvest that amount of wiry, tough grass. Good management calls for clipping pastures as often as they need it.

Sudan grass hay is frequently mentioned by the experts as one of the best bloat preventers on the list. This forage is relatively easy to harvest in proper quality —and cows will readily eat 12 to 20 pounds of it daily in the barn or while grazing. The virtue of sudan grass in preventing bloat is in its rough, "tickly" blades that actually irritate the rumen. This causes a reflex action, a belch, that releases the gas that might otherwise remain trapped in the rumen. This muscular reflex action occurs involuntarily, which is why a distressed cow doesn't "have sense enough" to burp her way out of her trouble.

Oat hay, too, is a splendid preventive for bloat . . . par-

ticularly if it has the quality that appeals to a cow's appetite. Straw, however, is not a safe bet. Cows probably will not eat enough.

Finally, there's no substitute for keeping an eye on your cows if you mean to escape bloat losses. The suggestions made here, if wisely applied, should reduce your risks—but there'll still be a chance that a cow will bloat acutely and be dead quicker than scat if you're not there with a remedy. Try a gag in her mouth to make her belch. Passing an oversize hose down her throat and work it around to tap pockets of gas. Give a drench of turpentine, kerosene or mineral oil. This is especially helpful in cases of frothy bloat—a condition in which the gas bubbles are mixed with feed. In very acute cases, stick her in the left flank with a trochar and canula. But caution is the best cure.

Bulk-Handling of Milk Gains in '53

Bulk-holding tanks, pipeline milkers and milking parlors, considered as a system, probably is one of the biggest steps to milk-handling efficiency on dairy farms in history, reports an extension specialist.

P. R. Ellsworth, Ohio State University, said increased use of such equipment was one of the most significant developments in the milk-handling field in 1953. Although a small percentage of dairy farms use the system at present, Ellsworth believes a large number of milk producers will convert during the next years.

It will mean that older dairymen may stay on the job longer because it involves less work. For the same reason, the dairy farming will be more enticing to young men and milk haulers also may remain on their jobs longer. It will allow one milk producer to handle more cows and produce more milk at a greater income with the same amount of labor.

In such a system, milk flows directly from the cow to a refrigerated storage tank where it remains until a milk tank truck picks it up. It eliminates carrying milkers or buckets, individual straining and handling of milk cans. The system also permits a minimum of exposure of milk to air, thus reducing possibility of contamination.

From the bulk-tank, the milk flows through a pipe or hose to the tank truck. At this time, milk is tested and weighed instead of after it is hauled to the dairy plant. Some dairy authorities believe this provides more accurate sampling and weighing than present systems. *Ohio State University*

EFFICIENCY KEYNOTE OF MODERN BEEF PRODUCTION

It is time to reduce the waste of feed, fat and finances. . . .

Condensed from American Hereford Journal.

L. H. Rochford, Tejon Ranch Co.

IT IS A LONG route from the cattle range to the kitchen range. The beef-cattle industry in its complexity involves the breeding, feeding and marketing of cattle and the processing and merchandising of beef and its by-products. The consumer determines the volume and kind of beef that the market can absorb without demoralizing prices. Consumer demand is made principally through four factors:

1. Natural taste and desire for the product.

2. Purchasing power.

3. Comparative prices of alternative products.

4. Living habits.

Competition is keener now in nearly all fields of production because supplies of most consumer goods and services in relation to demand are greater than during the past decade of general shortages. Beef has strong competition from other foods and cattle by-products have ever increasing competition from substitutes. The consumer is again in the saddle.

Under such conditions cattle prices have greatly declined while major costs of production such as taxes, feed costs (because of government support), labor, equipment and transportation charges remain relatively high. By collective action beef producers cooperating with other branches of the industry can alleviate some of these problems and by cooperative effort promote greater consumption of beef and its by-products.

Competition with other commodities and within the beef industry is certain to continue and may become much stronger. For his own welfare and for the good of the industry as a whole, the individual producer must put ever increasing emphasis on efficiency of production and marketing within his

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own operations. To do so he must keep in mind the over-all route his beef must travel on its way to the consumer.

The beef animal is a machine designed by nature to convert important plant growth into human food. This machine, being a ruminant, operates at greatest efficiency when it harvests and converts pasturage and other bulky roughage.

To meet consumer demand steers and heifers must be marketed before maturity if top prices are to be obtained. Concentrates are needed, therefore to supplement the roughage that the animal must consume. In the process of commercial production of beef, however, the most efficient and economical gain comes through maximum utilization of roughages, not concentrates.

To be really efficient the beef breeding animal must possess the ability to reproduce abundantly over a long span of life. Like the high-quality car or tractor this beef machine must be sturdy, enduring and able to withstand adverse conditions, but should not be called upon to do so except when necessary. Proper conformation is of utmost importance if the ultimate product of this machine is to meet ready demand. An abundance of natural fleshing, properly distributed, is the foundation for quality in beef. Fortunately, this factor can be possessed together with the other requirements.

The factors for feed utilization, reproduction, sturdiness and quality of product, which together constitute the potential efficiency of the beef animal are determined by inheritance. Any expected improvements, therefore, must come through selective breeding. The practical problem then is to find the animals that excel in all these factors and which can transmit their superiority to descendants. This is a most difficult but basic problem of the beef-cattle industry today. It presents a real challenge.

The first responsibility rests with the registered cattle breeder who is the producer of parent seed-stock. To have any great economic effect, however, the principle of careful selection to increase potential efficiency must be used in the majority of commercial herds. A steadily increasing number of operators of commercial breeding cattle are alert to this whole problem and are in search of purebred bulls with a background of proved efficiency. In fact, the present demand far exceeds the supply of such bulls.

What are the best practical methods for measuring the potential efficiency of beef-cattle strains? Some progress has been made but there is certainly much to be done and a great field of opportunity in this di-

rection. In our opinion, standard measures for rating efficiency of beef animals can be developed through coordinated effort and study by all segments of the industry.

Stock shows and carcass contests have been of great benefit in promoting production of a high-quality product for the ultimate consumer of beef. They do not, however, reflect the true efficiency of the animals exhibited. In fact, the champion individual, or carlot, or winning carcass in any show could actually represent breeding of low efficiency and thus have a retarding effect on progress.

Numerous breeders of registered cattle have made much improvement in their seed-stock through individual performance records that take into consideration both grade of animal and gaining ability. In most instances, however, we have not gone far enough with these records. Experiments have shown that gaining ability is inherited. Significant variation in gaining ability occurs among animals apparently equal in type and grade, but of different breedng. This suggests the desirability of feed efficiency trials with young growing bulls, especially through the yearling stage. Numerous trials have been made by both breeders and experiment stations. They present the question as to how the most effective tests can be conducted.

In some tests young bulls have been fed a heavy ration of concentrates and a minimum of roughages. Stockmen have questioned this procedure on the theory that the ability of the animal to utilize roughages was not properly considered. In other instances, the feed provided barely met maintenance requirements and the potential gaining ability of the animals involved was not really tested. The most accurate test may be where young bulls have access to an abundance of grass or harvested roughage plus a limited concentrate supplement. Tests made within one herd by the breeder have very definite value for the owner, but comparative results with other herds may be difficult because of variation in environment.

Cattlemen have displayed interest in tests where young range bulls from several breeders were assembled on one ranch and developed together under comparable conditions for one full season. Tests of this nature, supervised by the American Hereford Association cooperating with Hereford and cattlemen's associations in the state involved, could be very beneficial. For such a test we suggest that the following points be taken into consideration.

1. Locate the test in an import-

ant range cattle breeding area, preferably on a well-known ranch. Consult with the college of agriculture on details of procedure. The man in charge of the bulls should be experienced in handling purebred beef cattle and possess some training in experimental methods.

2. A minimum goal of at least 10 different herds is suggested.

3. Start with bulls comparable for age and condition (12 to 15 months old when assembled).

4. Put the bulls through a 30- to 60-day preliminary period for adjustment to equal environment before starting actual test.

5. Suggest the actual test be for a period of 180 days and be designed to bring the bulls to serviceable age.

6. If the number of bulls justifies segregation into different groups, endeavor to have all herds represented in each group.

7. The plan of feeding is debatable. We believe the animals should have abundant pasturage; and free access to high-quality hay when and if such pasturage is available. Perhaps at no time should the concentrate ration exceed 1.0 lb. daily per 100 pounds live weight.

8. Weigh and grade all bulls both at the start and close of the actual test period. Comparable weighing conditions for all bulls is of utmost importance.

9. Calculate the per head cost and charge to be made as accurately as possible and in advance of the test. May want to allow co-operating breeders to withdraw bulls before close of test if they do so before a certain date.

10. At close of period hold a show and auction sale, preferably where the test is conducted. Exhibit the bulls in pen lots with prizes offered by the associations which sponsor the test. In scoring the pens for place in the show, suggest that equal value be given to grade and average daily gain. All bulls completing the period should be exhibited and sold through the auction.

An efficiency test of a sizable lot of young range bulls followed by an auction of all the animals should attract the interest of both breeders and commercial cattle operators. It should promote closer relationship between these two groups of producers. Finally, it should help to focus attention on efficiency in beef production.

For many years grade standards for slaughter cattle and carcasses centered attention on a very high degree of finish. Consumer demand was stimulated for "Prime" and "Choice" grades on the theory that a thick covering of fat was essential to quality in beef. More recently consumer food habits have changed decidedly, with the

average person desiring less fat of all kinds and more top quality lean meat. The revised grade standards are an attempt to recognize this change, but does the revision go far enough?

Even under the revised grades, many retailers catering to family trade have repeatedly told the writer that the "Choice" grade carcass carries more fat than customers now desire. They insist that much of the fat must be trimmed from a "Choice" grade cut either by the retailer or the customer. They declare that "Top Good" to "Low Choice" is just right to meet the demand of most customers, providing the meat is tops for texture and marbling. This demand apparently holds for very discriminating buyers as well as for those seeking meat bargains. If this situation is generally true over the nation, the production of "Prime" and "Choice" grades, beyond narrows limits, represents a great economic waste to both producer and consumer.

Perhaps one important reason for encouraging the discriminating consumer to seek top grades of beef has been the fact that "Commercial" and "Good" grades so often represent animals of inferior breeding, or cow beef and a product generally of lower quality, irrespective of degree of fat. Well-bred, naturally thick-fleshed cattle represent a steadily increasing percentage of the total slaughter. Beyond doubt this is an important reason why an increasing number of consumers are finding best satisfaction from "Top Good" to "Low Choice" carcasses. Such animals, when properly fed, yield attractive carcasses with adequate fat covering and fine-textured, well-marbled meat of excellent quality.

Economists tell us there is a definite trend in consumer demand for more animal proteins, vitamins, leafy vegetables, fruits and dairy products, and for less fats, oils and starchy foods. In this the consumer has the approval of most of the medical and nutrition professors as well as the support of leaders in sports and feminine fashion.

This general trend in consumer demand is a boon to all cattle producers. Every experienced feeder knows that well-bred cattle can be brought to the "Top Good" to "Low Choice" grade at relatively low cost. The high cost and real financial risk come in fattening such animals for the "Choice" and "Prime" grades. Perhaps the time is near at hand for the beef industry to take a new look at methods of fattening, marketing and grading of cattle and beef, including a new appraisal of our show-string standards.

Milk Fever

Vitamin D seen as aid in warding off attacks. Here's a review of recent research . . .

Condensed from Ohio Farm and Home Research

J. W. Hibbs and W. D. Pounden

MILK fever is a serious disease of cattle typically associated with the time of calving and beginning of lactation. It is accompanied by sudden paralysis and gradual loss of consciousness, and usually results in death if the animal is untreated.

Authorities assume that no such disease as milk fever existed two or three centuries ago. Apparently it became prevalent with the period when cows were selected and fed generously to increase milk production. But gradually, scientists have learned more about the nature of the disease and effective treatments have brought mortality down from 60 to 70 percent to less than 1 percent.

Despite this reduction in mortality, there is still considerable hazard connected with a milk fever attack. These hazards form the basis for a need of some relatively simple method of preventing milk fever from occurring. For many years experimental work has been in progress at the Ohio Station aimed at developing an effective method of prevention.

Research has led to a better understanding of milk fever and many of the earlier theories, when viewed in retrospect, appear unfounded. Some of them attracted wide attention at the time of their publication, but gradually the false ones were eliminated.

Two of these early treatments were the Schmidt udder inflation method and an intravenous injection of calcium boro-gluconate, both of which had merit and have contributed to present day knowledge.

Use Vitamin D

Vitamin D has long been as-

Reprinted from Ohio Farm and Home News, Wooster, Ohio

sociated with the metabolism of calcium and phosphorus. It was this knowledge which first prompted its use as a possible milk fever preventive. At present vitamin D feeding is a reliable means for warding off an attack. The procedure calls for feeding massive doses of vitamin D (30 million units per day) for from 5 to 7 days before the calf is born. Form of the vitamin D in this experiment was either oil concentrated irradiated ergosterol or type 142-F irradiated dry yeast. One of the problems involved in the success of this method of prevention is predicting the freshening date so that vitamin D feeding can be properly timed.

Parathyroid deficiency seems to come the closest of over 30 theories advanced to date in explaining the cause of milk fever. There is no definite proof, however that parathyroid deficiency is basically the cause.

According to this theory, the abnormally great decrease in blood calcium at freshening is caused by a deficiency of the parathyroid glands. These glands, located in the neck near the thyroids, help regulate the distribution of calcium between the bone and blood. The onset of a profuse secretion of milk causes a sudden withdrawal of calcium from the blood to the milk. This loss is normally replaced through the blood calcium regulatory action of the parathyroids. When this regulation fails to take place rapidly enough, parturient paresis or milk fever may develop.

One must bear in mind that the drain on blood calcium for production of colostrum is not the primary cause of milk fever. If this were true then every heavy milking cow would be subject to the disease. It is more likely that the cause is the inability of the blood calcium regulatory mechanism to meet this sudden demand. Why it does not meet this demand remains yet to be discovered. Here lies a challenging phase for future research in milk fever.

Only recently, experiments have shown just how much vita-

MILK FEVER PREVENTION USING VITAMIN D

Million Units Fed Per Day	No. of Cows Fed*	No. of Milk Fever Cases
0 (control)	17	9
10	10	1
20	4	0
30	10	0

*All cows had previous milk fever histories.

min D to administer and over what period for effective milk fever prevention. Work done at the Ohio Station has indicated that by feeding the massive dosage mentioned, blood calcium and phosphorus levels maintain a higher than normal level through the critical period after calving. This affords protection against milk fever and indicates that this method of prevention is physiologically sound.

Work recently completed has shown that no harmful effects are likely to occur from feeding large doses of vitamin D during the short time needed for milk fever prevention. Prolonged feeding of vitamin D was shown to be definitely harmful to the cows.

Plans are now being made to carry out some large scale experiments under practical herd conditions, and at the same time to work out a way of making vitamin D available in suitable form for use by dairy men. The practical application of this method of milk fever prevention will hinge on the results of these experiments.

Sheepmen Warned About Vitamin A Deficiency

Sheep producers should be on guard against vitamin A deficiency in ewes due to lamb, says George A. Allen, Jr., sheep specialist at VPI.

Sheep normally store up a good supply of the vitamin from green pasture during the grazing season, but dry weather during the summer and fall has caused pastures to be very low in vitamin A. Symptoms of the deficiency are blindness, a watery discharge from the eyes, or lambs that die shortly after birth. Green pasture, green, leafy legume hay, and yellow corn are the best sources of vitamin A. If high quality legume hay cannot be fed for about a month ahead of lambing, it would probably be wise to feed a vitamin A supplement.

Ewes that lose weight during late pregnancy are subject to lambing paralysis. The ewes should receive ¼ to ½ pound of grain and 4 pounds of legume hay a day starting a month before lambing. If ewes are on good winter pasture the amount of grain and hay can be reduced.

All sheep should be treated during late fall to control the nodular worm. Drenching the entire flock with phenothiazine is the best means of control. Worm-free sheep not only have better health, but make better use of feed and are more profitable.

Virginia Extension

Economic Stability—

No. 1 Farm Problem

Agricultural surpluses now are the pressing factors in "cost-price" squeeze. Here is a discussion of their background . . .

Condensed from Wisconsin Alumnus

Noble Clark, ASSOCIATE DIRECTOR, Wisconsin Experiment Station

"This nation has a serious farm problem. It does not affect agriculture alone. . . . We have learned through sometimes bitter experience that when the farmer is in trouble, there is likely to be trouble ahead for everybody. . . . While farm income has been dropping, our total national income has actually increased. This disparity cannot continue in an economy such as ours. When the farmer can't buy the products of industry, there are certain to be serious dislocations." These words were used by Secretary of Agriculture Ezra Taft Benson recently as Congress prepared to convene. He pointed out that the government has about $5 billions of taxpayers' money invested in farm commodities, both in inventories and outstanding loans.

AMERICAN agriculture knows how to expand production. We do not have the same confidence in our ability to maintain a stable demand, at fair prices, for what our farmers have to sell. Why must a Congress and Department of Agriculture give so large a portion of their time to price support programs, acreage restrictions, market quotas and similar efforts to stabilize the incomes of farmers?

The problems involved are very complex. There is no short or simple explanation. Yet, certain factors are particularly worthy of consideration.

For at least 40 years American farmers have, except in wartime, consistently produced more food crops and livestock and cotton than they were able to sell at prices they considered satisfactory. So far we have found no suitable way in peacetime to maintain an effective balance between our volume of farm production and the demand, whether here or abroad, for what our farmers want to sell.

It is true that high birth rates

Reprinted from Wisconsin Alumnus, Madison, Wisconsin

in the U. S. since the end of World War II give considerable encouragement that the demand for food will expand. But the offsetting factor is our increasing production. During the past 13 years our farm output has been going up at the average rate of 2.3 per cent annually —half again as fast as our current rate of population increase.

Continued Population Growth Not Certain

Of course, if farm prices slip, production may also slow down a bit. My personal guess is that we probably will not continue to accelerate farm productivity at a steady rate of 2.3 per cent each year during the period ahead, especially if farmers continue under the present economic squeeze in which the prices of things they sell have fallen and prices of most of the things they buy have risen. But there is also the possibility, if not the likelihood, that our high post-war birth rates may not continue. Birth rates have almost always gone up after previous wars, then have returned to the pre-war levels, or even lower.

The foreign market in peacetime has in recent years absorbed from seven to ten per cent of our American agricultural output, chiefly wheat, cotton, tobacco and certain animal products like lard. These exports have had an economic significance much beyond what the figures might imply. They have absorbed our "surplus," and hence helped to maintain a stronger price for the much larger portion of our crops sold here at home. In wartime this foreign demand expands enormously, and we have no surplus problem. In peacetime there just do not seem to be markets abroad which will pay American prices for more than that seven to ten per cent of our annual output of crops and livestocks.

We can use some of the so-called surplus to help those in distress and to win friends, as in gifts to the drouth-stricken Pakistani and to the hungry people of East Germany. But the total quantities in such gifts do not usually aggregate as much as the amount we have available after we have taken care of our regular demand and sales here at home and abroad.

This is not to say there are not millions abroad who are still hungry. Only a minority of the world's people live in nations where adequate food supplies are consistently available. And the world's population is increasing at the rate of about 25 million additional persons annually. The better-fed nations have even more food today than pre-war, but the per capita consumption in most of the hungry nations is unfortunately less now than the inadequate quotas they had 15 years ago.

Foreign Countries Buy Farm Tools, Not Farm Products

Many of us hoped that the post-war recovery in Europe and in other war-torn countries

The U. S. Department of Agriculture recently released some figures which emphasize these difficulties. Our exports of farm products dropped 31 per cent during the year ending June 30,

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They already are producing some of their food requirements, and can increase this production by certain improvements in their own farming—more irrigation or the use of more fertilizers, for example. But there is no way for them to get coal or steel or aluminum or commercial fertilizer or electric generators or farm machinery except to buy these items from another country. Therefore they will buy these items abroad rather than import more food.

increased even more than has the value of these exports.

Now, what does all this mean in terms of farm programs and policies? I have no panaceas—but I can list some public programs that seem to me are wise and in the national interest.

To begin with, the goal of these public programs must be made clear. Farm policy should be something more than political policy. No matter how important it is for farmers to have economic justice, that need must always be kept in line with the

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Many of us hoped that the post-war recovery in Europe and in other war-torn countries would permit these countries to expand their purchases of food from abroad and thus improve the nutrition of their people. Certainly the total quantities of food available here in the U. S. for export are only a tiny fraction of the enormous quantity which would be necessary if world hunger were to be taken care of. But we are learning that the nations which need our food need many other things they cannot provide for themselves: minerals, coal, petroleum, and complex industrial products like aeroplanes, trucks, and farm machinery.

These nations have very limited foreign exchange with which to purchase goods from abroad.

They already are producing some of their food requirements, and can increase this production by certain improvements in their own farming—more irrigation or the use of more fertilizers, for example. But there is no way for them to get coal or steel or aluminum or commercial fertilizer or electric generators or farm machinery except to buy these items from another country. Therefore they will buy these items abroad rather than import more food.

The U. S. Department of Agriculture recently released some figures which emphasize these difficulties. Our exports of farm products dropped 31 per cent during the year ending June 30, 1953. This drop was declared to be a major factor in the current farm economic slump here in the United States.

By contrast with the falling off in agricultural exports, non-agricultural exports increased six per cent. Farm exports now aggregate only 19 per cent of our total sales abroad, whereas they were 26 per cent a year ago and even higher previous to that. Our sales abroad of the products of our farms are actually less in dollars now than 25 years ago, and you know a dollar will not purchase much more than half as much as it did then. Thus the physical volume of farm exports has decreased even more than has the value of these exports.

Now, what does all this mean in terms of farm programs and policies? I have no panaceas—but I can list some public programs that seem to me are wise and in the national interest.

To begin with, the goal of these public programs must be made clear. Farm policy should be something more than political policy. No matter how important it is for farmers to have economic justice, that need must always be kept in line with the

long-term needs of the national economy.

Farm Policy A Natural Resources Policy

Farm policy is not simply a policy for the disposal of surpluses. That may be a current issue, but it is not the central or most important one. Instead I see farm policy as a national resources policy. Its first goal must be to make sure that this nation has a food production plant adequate to all of our normal needs, and with the reserve strength to protect us in time of national emergency.

Within this framework I suggest the following:

Our government should do all that it reasonably can do to encourage the sales abroad of our farm crops and livestock. We may find it increasingly difficult to expand these exports, but we should make an effort if we can do no more than simply prevent further declines.

The most effective way to expand foreign sales is to lower our tariff rates and to purchase more goods from abroad. This will give our foreign customers the dollars with which to buy our American exports.

Our government should likewise continue to encourage exports of non-agricultural products. Such sales to foreign buyers mean increased payrolls in our urban American industries. These increased payrolls provide increased demand for the products of our farms—and at American prices. They also create more jobs and better economic opportunities for rural youth not needed in agriculture.

Our government needs to continue its programs to help ill-nourished Americans have the food they need for health and full vigor. Medical examinations of draftees during the past decade have shown that too many of our boys and girls are not getting the milk and other dairy products, the vegetables and fruit, the eggs and meat they require for normal growth and for the vigor they must have if they are to make the most of their inherent talents. There are a lot of things our nation can do in this connection to improve the welfare of our own people. With all the good results which have followed the school lunch program, even today three out of four youngsters of school age are not getting milk in their school lunch. As long as this situation continues, it is a misnomer to say we have a milk surplus in the U. S.

Ever since the first American census in 1790 there has been an almost continuous reduction in the proportion of people living on farms. Back in George Washington's day nearly 90 per cent lived on the land, and worked long hours to raise enough for themselves and the

10 per cent in the urban communities. This ratio now is almost reversed. Only about 15 per cent live on farms and the percentage is steadily decreasing.

10% of People May Be Enough on Farms

With further mechanization it should be entirely possible for 10 per cent of our people in commercial agriculture to raise all the crops and livestock our citizens need in peace times. Those persons who want to stay in agriculture inevitably face the challenge of being more efficient farmers than those who find farming relatively less profitable. This means more and better research to reduce costs of production, to prevent losses due to insects and diseases, to improve quality and to increase the output per farm worker. To do this will also require better education and more technical training for farm operators.

Finally, our American surplus capacity is really not a very large margin over and beyond what we are now consuming and selling. This extra capacity is one of the most valuable assets our nation has in terms of national defense. We should be careful not to treat it as a handicap or a "bad" thing. On the contrary, it may make the difference between misery and victory if and when our people are compelled to go to war again.

Our government should find a practical way to protect and maintain at least a portion of this "surplus" capacity, and do so in such manner as not to penalize American farmers by compelling them to sell their product at depressed prices in markets which do not need, for immediate consumption, quite all that has been produced.

There are few, if any, more important tasks than this which now confronts our national administration and the Congress.

We can all join in wishing them wisdom and success in this difficult assignment.

Farm Marketing Takes More Work Than Production

More workers are now engaged in the marketing of farm products than in farm production itself, according to a recent U.S.D.A. report on marketing and transportation of farm products.

Fewer and fewer workers have been needed over the past 2 decades to produce food and fiber on U. S. farms. More and more people have been engaged in marketing farm produce, the report indicates. During the last 20 years, the number of workers in agriculture decreased by 10 to 15 percent. The number engaged in marketing may have increased by more than a third.

Ohio State University

Mushroom Farming

It takes some doing to make good profits. . . .

Condensed from the New England Homestead.

Samuel Silverstein

THE LAST USDA census shows that 60,000,000 pounds of mushrooms were grown in the United States in one year.

Michael Swider of Colchester, Conn., is doing his part in providing mushrooms for public consumption. It has been only five years since Mr. Swider started Michael's Mushroom Farm. He now has three houses, each 20 by 50 feet, and each having five tiers of growing beds on each side of a center walk running the entire length of the houses. Altogether he has almost 8,000 square feet of bed space. Not bad for five years work.

Some people think there is a secret in raising mushrooms. Many have tried in a variety of ways, in cool, moist cellars, but with disappointing results. "There is no secret of raising mushrooms successfully," says Mr. Swider. "It is the knowledge of many secrets that carries out this type of farming. fully." The grower must know mushrooms and what they need.

At Michael's Mushroom Farm, the houses are made of cinder blocks; they have solid walls, no windows. It isn't absolutely necessary for the houses to be dark and windowless, Mr. Swider points out.

Mushrooms need plenty of fresh air plus an even cool temperature. For optimum growth, 58 degrees F. is considered best. That is why mushrooms are many times grown in caves and mines where the temperature fluctuates but slightly from winter to summer, and where there is a natural circulation of fresh air. Since Mr. Swider had no caves or mines, he built houses that provide good growing conditions for his mushrooms.

Mr. Swider's mushroom beds are made of cypress wood which does not decay under prolonged moist conditions. The beds are filled with a 4 to 6 inch layer of compost of horse manure and

Reprinted by permission from the New England Homestead, Springfield, Mass.

wheat straw. It is from this compost that the mushrooms gather nutrients.

But before the spawn—which is the seed of the mushroom prepared for propagation purposes—is planted in the compost, a pasteurizing process takes place. This pasteurizing process consists of subjecting the compost in the beds to live steam at a temperature of 135 degrees F. for one to two days. The purpose of the pasteurization is to kill any weed seeds, insects, and fungi that may be present in the compost. The lack of facilities for pasteurizing compost is the main reason growing mushrooms in cellars is difficult.

The spore culture to be planted is purchased from commercial spawn growers. Small pieces of the culture are broken off and planted 8 to 10 inches apart in the compost beds. If temperature and humidity are ideal, the planted spores will spread throughout the compost within two or three weeks and start coming to the surface. At this time one inch of good loamy soil is spread over the compost bed. Ten to twelve days later, the mushrooms are ready to pick for market.

"Mushrooms are not picked according to size," Mr. Swider says. "Their size isn't considered. Mushrooms are picked half a day before the mushroom opens up and exposes its gills. Some may be large and sometimes many are small, depending on the growing conditions." When harvested in this manner, the mushrooms reach the public in the best possible conditions. When the mushrooms are picked, roots on the butts are cut off, then the mushrooms are sorted as to size and quality and packed in one-pint containers and three-pound containers.

Mushrooms seem to grow in two-week cycles, according to Mr. Swider's observations. After the first crop is harvested, another crop appears from the same spores within two weeks. And this series of mush room crops continues from the first planting for nearly two months; each crop decreases in number but not in size until the original planting has depleted itself. Then another planting of spores is in order. The first planting takes place early in September and mushrooms are harvested at the Michael's Mushroom Farm until July when the temperature gets too warm for optimum mushroom growth.

Mr. Swider averages 1.7 lbs. of mushrooms for every square foot of bed space. If his average dropped below 1.5 pounds per square foot, his business would operate at a loss. Constant attention and skilled operations, he says, are needed to produce good crops. He says he must always be on the guard for fungous diseases, mites and mushroom flies. "A crop can be lost

overnight," Mr. Swider comments.

Mr. Swider believes that there are many housewives who have not as yet discovered the value of mushrooms as a good food. For a long time, mushrooms had been regarded as a luxury. Thirty-five years ago, one pound sold for $1.50. During the first World War the price of mushrooms was still a dollar a pound. Now the prices have come down as low as 49 cents a pound, even though the cost of production has gone up. Improved methods have brought the price down to a point where it is economical to buy mushrooms as an everyday food. Research in penicillin during the war revealed that the food value of mushrooms is much higher than it was formerly believed.

To those who think mushrooms have little nutritional value, Mr. Swider quotes scientific tests that show the protein value of mushrooms. The adaptability of the mushroom to blend with other foods makes them a good choice for the kitchen. Mushrooms can be boiled or fried and they need only to be washed before being ready for the stove. The most popular of the canned soups in this country is cream of mushroom soup.

Growing mushrooms is really a full-time job, says Mr. Swider, who earns his entire income for his family from raising them. "It takes all my time to carry out all the work involved."

TCA Won't Remain In Soil

Will the powerful new chemicals used to control weeds or insects on our agricultural crops stay over in the soil and cause later damage? That question has bothered agricultural researchers with every new chemical tried.

University of Wisconsin researchers now report encouraging experimental results for one of these chemicals. They say that TCA, a material now being used for weed control in row crops, does not remain in the soil to kill plants the next year.

Horticulturists T. W. Tibbits and L. G. Holm carried out the experiments. They say muck and silt plots which had been sprayed with 60 pounds of TCA per acre (30 pounds in 1950 and 30 more in 1951) did not contain enough weedkiller to harm the growth of snapbeans. Snapbeans are very sensitive to TCA, and they show clearly defined symptoms when as little as one or two pounds of the material is present in an acre of soil. The 30 pound application is much heavier than would normally be used.

Wisconsin Extension

FARM DEALERS ARE LEARNING . . .

SELL THE FARM BOY IF YOU WANT TO SELL HIS DAD

Condensed from Printer's Ink.

Owen Ellis

"You've got to start with the kids, if you're ever going to sell anything to farmers," is the way a branch manager of an implement company put it the other day.

Then he went on to tell of an inquiry received last week. The coupon had been signed by a farmer living not more than 40 miles from the branch. The weather that day was ideal, so the branch manager thought he would go out and make a call.

En route he picked up a dealer in whose trading territory the inquiring farmer lived. When they arrived at the farm, they visited with their prospect and gave him both barrels in an effort to get the order. But there was no chance of closing.

Clear It With Johnny

Finally the farmer told them that he would buy their tractor if it was all right with his son. When they learned that the boy was in grade school, they thought they had a pushover. But after a half-hour visit with the youngster they were not able to convince him that they had the tractor for this farm.

Once more they went back to the father and went over the arguments, but he still said no dice. He explained that his son was already his unofficial partner and would be taking over operation of the farm in another 10 years. Already the father was relying on the boy's judgment.

"Funny thing, that kid knew more about tractors than my dealer," he said. "He proved to us that he had been studying tractors. If we had been direct-

Reprinted by permission from Printer's Ink, 207 East 42nd Street, New York 17, N. Y.

ing our advertising and selling effort on that boy, we would have got the business."

New Buying Influence

One of the most common complaints among advertising men is the number of curiosity seekers who sign coupons. I am reminded of the president of a big mail-order house that ran some advertisements in a farm publication featuring a fertilizer spreader. An inquiry came in from a prospect, and the head of the company called on the farmer to make a sale. But more than anything else he wanted to get a good farm interview to see what he could learn about developments.

Arriving at the farm, he learned that the inquiry had been sent in by a son who was studying agriculture in school. When the mail-order president talked with the parents, he soon made a sale. The boy's father said: "My son has been studying this catalog and reading everything he can about soil building. If he's that interested in building up our farm, I'm going to buy one of your machines to encourage him. He's going to own this place some day."

But that isn't the end of the story. A neighboring farm boy was taking the same course in school, and these two boys had been studying together. A mile or so up the road another interview with the other boy's father, and the second fertilizer spreader was sold in one day. Maybe that doesn't sound like very much, but we were in a depression at that time.

Youngsters at Farm Shows

Go to a state fair and visit the farm equipment exhibits. You will find more farm boys than adults in attendance. Who is it you see sitting on the demonstration tractors? It's invariably a farm boy. The equipment folks like to have youngsters demonstrate their machines, just to show how easy they are to operate.

Farm leaders recognize today that it wasn't the hard work that drove so many farm boys from the open country to the cities. Looking back, they realize that many farm youngsters worked until they were through high school without getting a regular wage or any financial interest in the farm. A hired man, working next to the farmer's son, might be paid as much as the assistant cashier of the bank in town, but the farmer's son was doing well if he got pocket money on Saturday night.

Too often, by the time he was ready to go to college, he had saved no money, and his parents hadn't set anything aside for college. The result was either he didn't go to college, or he had to work harder than the

average student to stay in school.

But things are changing. There has been a great wave of farm partnerships between father and son or sons.

Boys Share the Profits

Many farm boys have rented a neighboring 40 or 80 where they have produced a cash crop of corn, soybeans or alfalfa. It's quite common for father to agree to share a certain part of the profits on a farm with sons who are still in school. Obviously such farm boys are anxious about expenditures for manufactured products. They read or listen to advertisements about the machinery they use or the fertilizer or work clothing, automobiles and the many other things it takes to make a farm good.

Go to a state fair or almost any farm show and you'll see farm boys demonstrating the proper way to roof a building or to eradicate weeds. To do these things, they've got to learn about manufactured products available for farm use.

Not long ago, an 18-year-old farm boy brought a group of people to my home. He had been driving a considerable distance. About the first thing he wanted to know was where he could find a service station that sells a certain brand of motor oil. Try as I would, I could not get him to patronize my service station friend just two blocks away. We got in his car and drove about a mile, waited a half hour until the oil had been changed and then went back home. That boy had been so thoroughly sold by advertising on the value of this certain oil that he would have no other.

Some of the insurance companies are finding it very effective to direct their advertising to farm youth. They know that parents read with great interest the advertisements about farm youth and how to pass property along to them. So the makers of automobiles often show a farm boy in their ads. They have been trying to do a powerful job of selling farm safety and have learned that one successful way is through farm youth. One youngster alone turned up 100 hazards on his family's farm that had been corrected because he had become interested.

Willing to Pioneer

It is the farm boy who prepares his livestock for market. He buys feed, and often he sets the example for his dad to follow. Because of his energy, it is the farm boy who is usually most willing to try a new experiment whether it be with a manufactured product or in handling a crop.

Advertising that compliments farm youth is effective. I know

of an insurance company that sends a hundred farm youth leaders to a farm meeting each year. Almost all of our livestock shows are built around farm youth.

If the truth was known, I believe it would develop that farm youth are thorough readers of farm magazines and agricultural extension leaflets and folders. And I believe it would show that farm youth give the greatest listenership to educational radio programs. There isn't any doubt that farm youth take the adults to farm meetings and on shopping trips.

The airplane is becoming accepted as a farm machine, and I don't think it would be too difficult to prove that farm youth showed the way. Today the adding machine is a farm machine because farm youth learned about such equipment in school. Our newest fertilizers and the most modern farm machines, as well as pest-killing sprays and high-producing herds all gained the interest of farm boys and girls. In many instances, the tests were made by farm boys themselves. Later dad followed suit and adopted this or that idea.

Youth Sets the Pace

Go to almost any farm in the Midwest and you will find gadgets built in the machine shop by farm boys who have cut, welded, lathed and pounded together such items. Where the father had electricity brought to the farm for lights and a water pump, the son figures out dozens of other uses for such power. If farmers are among the best traveled part of our population, certainly farm youth must be credited with part of the honor. After all, they do get around and travel in connection with their school affairs, 4-H and FFA activities, farm shows, athletic events and so on. Consequently, they encourage their parents to get out on the open road.

It's A Parade

If you sell vacation trips by advertising, get farm youth into the picture. If you sell tractors, put your accent on farm youth because these boys are an important factor today and will be more important in the future. If you sell modern homes to farm people, show in your advertising what such advantages mean to farm youth. There's nothing I know in this business of advertising or selling to match the enthusiasm of farm youth. If our advertising is not talking to an audience, but rather to a parade, let's be sure that the youngsters in the parade hear our message.

* * *

When cows are bred as early as 35 days after calving, only about one of three settles the first time.

Enthusiastic Friends Complete a

4-H Building Program

Condensed from National 4-H News

Harold B. Swanson

IN LESS than a month over 400 enthusiastic friends of 4-H Club work in LeSueur county, Minnesota, practically completed a 4-H building program, once planned to take five years.

When the county fair opened last August 10, fair-goers were greeted by a new 4-H cattle barn, 70' x 160'; a lunchroom addition 22' x 70' to the old 4-H Club building; new concrete floors in the old 4-H barn; and repairs on other buildings.

Work on the huge barn and other improvements started in mid-July. The first rafter on the barn went up at 11:00 a. m. Friday, July 31. By fair-time, a little over a week later, the building was practically completed.

Planning for this united community effort started only a few months ago. Then County Agent Donald Hasbargen suggested that 4-H friends plan all the improvements needed in 4-H Club facilities at the county fair in the next five years.

After the committee made its recommendations, members agreed to start and complete the project in a few weeks instead of years. Practically every farm group plus business groups from LeCenter and LeSueur, public officials, and other 4-H friends joined in the effort, contributing labor and some materials with a will that amazed officials.

Mr. Hasbargen estimates that about 400 citizens have worked on the building. One day 52 men were working on the barn alone, and another eight on other buildings.

During a two-week period an average of 25 volunteer workers were on the job each day. The volunteer crew alone, moved 100 tons of building material.

4-H leaders served lunch each noon so workers could keep on the job steadily. Others contributed food for the workers. Mr.

Reprinted from National 4-H News, Chicago, Illinois

Hasbargen estimates that the building will cost $7,000 compared to $17,000-$18,000 if construction were contracted.

Money for the improvements will come from a one quarter mill levy by the county commissioners, donations by 4-H Club members, and profits from special events.

The County 4-H Federation has contributed $700 to the project. 4-H Clubs in the county plan to raise $2.50 for each of the 450 members. A special dance netted over $1,000, and many other projects have been planned to meet the cost of this public building.

Tips for Beginning Farmers

W. L. Calvert, a Minnesota credit specialist, gave these tips to young beginning farmers: "Before you buy or lease, estimate carefully your income and expenses—and don't be optimistic about weather and prices. Remember, there are bound to be occasional poor years and you need to be prepared to endure at least one poor crop year."

"Don't buy a farm until you have seen it perform under both dry and wet conditions. It may look much different in a wet year than it looked in a dry one. If you can buy a farm you've been brought up on or near, you have a big advantage—then you usually know what you're getting."

"Rent instead of buying—this includes both land and machinery. By renting, you can conserve capital for necessary investments and build up your operation with a minimum of capital."

"Carry enough life insurance to cover present debts and at least half of the amount you may owe on the farm itself. Also needed are enough fire and tornado insurance. Even more necessary may be adequate liability insurance for autos, trucks and the general farm operation," he said.

University of Minnesota

Clover In Bermuda Grass Equal to Applied Nitrogen—Clover growing in combination with Coastal Bermuda grass produced in a recent experiment as much forage as was obtained when Coastal Bermuda was grown without a legume but with 100 pounds of applied nitrogen. Louisiana white, Dixie crimson, and subterranean clovers all equaled the nitrogen application in effect. On the other hand, big trefoil in combination with Coastal Bermuda grass produced between 600 and 800 pounds less forage than the Bermuda grass alone with 100 pounds of applied nitrogen.

How Herd Management Influences Annual Fat Yields

Good inheritance is not enough to maintain profitable dairy production . . .

Condensed from The Ayrshire Digest

Richard C. Foley, UNIVERSITY OF MASSACHUSETTS

DAIRY farmers are well aware of the fact that management practices have an important influence upon their annual herd averages for milk and butterfat production and upon the records of the individual cows as well.

Research workers, students of breeding, bull committees responsible for the selection of sires for use in artificial breeding units, and many others are constantly faced with the problem of trying to evaluate the relative influence of environment and heredity in the milk and butterfat yields of a group of daughters of a given sire. The need for some method of evaluating various environmental influences has become more urgent with the adoption of artificial breeding by great numbers of commercial dairymen and by breeders of registered dairy cattle.

A study of N. B. Bayley and E. E. Heizer of the University of Wisconsin conducted between September 1947 and May 1949 has provided some excellent data on this subject, and with their kind permission the author has drawn freely from their detailed information to develop the tables found in this article.

A list of all the environmental factors which might influence milk and fat yields and butterfat

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test would total more than 30 items. Some of these factors have been studied in detail by a number of investigators and their influence can be measured with considerable accuracy. For example, most of the breeds have developed conversion factors for age, number of times milked daily, and length of record and these factors are already in use among research workers and some breeders. Considerable data have also been accumulated relative to the effect of the month of freshening upon the subsequent production record.

The author has found Bayley and Heizer's data particularly helpful in getting across to students and to dairy farmers the importance of certain herd management practices. All of these figures were derived from an intensive study of just under 1000 cows in 47 Wisconsin Holstein herds which had been tested continuously for an average of 16 years. All cows were milked twice daily and actual records for the first 305 days of lactation were used.

The five factors which will be considered in this discussion are: size of herd, length of dry period, condition at freshening, days with calf during lactation, pounds of total digestible nutrients consumed daily during the barn feeding season per 1000 pounds of body weight.

In order to emphasize the importance of each factor in terms of its effect upon annual butterfat production, Bayley and Heizer expressed their results in terms of gains or losses above or below a standard base of 350 pounds of butterfat.

As would be expected, there was considerable variation among the 47 herds studied in their management practices and Table I presents for certain selected characteristics the ranges and averages. The annual average yield for all herds was 11,402 pounds of milk testing 3.6 per cent butterfat and 413 pounds

Table I. General Data on the Herds

	Range	Average
No. of years on continuous testing	3- 39	16
No. milking cows in the herd	12- 165	61
Milk production per cow (first 305 days) (lbs.)	4569-19857	11402
Total butterfat per cow (lbs.)	160- 740	413
Butterfat test (%)	2.6- 6.0	3.6
Age at first freshening (mos.)	17- 44	28
Age at calving for last lactation (mos.)	21- 163	56
Days with calf during lactation	0- 283	178
Length of dry period (wks.)	0- 30	9
Pounds TDN daily per 1000# body weight	12- 27	17

of fat. The heifers freshened at 2 years and 4 months on the average, carried calves for approximately 6 months while milking and were dry for 9 weeks. The average daily intake of total digestible nutrients was 17 pounds per 1000 pounds of body weight.

1. SIZE OF HERD.—The data in Table II will not come as a surprise to many good small herd owners who have realized all along that the personal and individual attention they are able to give their cows is a major asset which has helped to offset the greater labor efficiency of some larger herds with which they were in competition. On the other hand, as one quick-witted, large herd owner pointed out in a meeting, these data indicate that the cows sold from larger herds into these small herds may well perform at a higher level in their new environment.

In small herds of 12-15 cows Table II shows that one may expect a gain of 40 pounds of butterfat at the 350 pound level as a result of small size of herd. On the other hand, in large herds of 70 cows or more the loss of production at the same level may exceed 20 pounds of fat.

Table II, Size of Herd

No. of Cows	Butterfat (Lbs.)
12—15	+39
20—30	+20
50—60	— 6
Over 70	—24

2. LENGTH OF DRY PERIOD.—A normal dry period of 6 to 8 weeks is recommended in textbooks and extension bulletins for dairy cows and most dairy farmers intend to provide their cows with such a rest period, but many farmers who have checked back on their herd records at the end of the year have been surprised to find that many of the cows were dry for substantially longer or shorter periods. As shown in Table III, a dry period of 11 weeks may result in a slightly higher record though there is no financial advantage in a longer dry period. Failure to provide for a dry period of at least four weeks will result in a substantial loss of milk and butterfat production during the following lactation. This factor is extremely important and should receive more attention than it does in most herds.

Table III, Length of Dry Period

Length (Wks.)	Butterfat (Lbs.)
1 only	—29
4 weeks	—11
11 weeks	+10
Over 11	No advantage

3. CONDITION AT FRESHENING.—In this study, condition was rated as 'excellent,' 'good,' 'fair,' and 'poor.' In the case of heifers, those rated 'excellent' were well grown out and moderately fat as revealed by the covering over shoulders and ribs. The 'good' heifers showed moderate development with some 'hookiness.' The 'fair' heifers were thin and sometimes underdeveloped. The 'poor' heifers were scrawny, undernourished and tight-hided. Table IV illustrates very clearly the importance of feeding heifers due to calve for the first time a ration which is liberal enough to provide a moderate covering of fat.

As test cow feeders have known for a long time, a backlog of fat for the heifer or cow to draw upon is necessary in the early stages of lactation if the maximum level of daily milk production of which the animal is genetically capable is to be reached. At this time the output of total digestible nutrients in the milk exceeds the intake in the feed in both the cow and the heifer, but the heifer must be brought up to full feed more carefully than the cow, and in addition, she requires additional nutrients for growth as compared with older cows.

First calf heifers freshening in 'fair' to 'good' condition may, therefore, be penalized 15 to 20 pounds or more on their records whereas heifers freshening in 'good' to 'excellent' condition may pick up an additional 20 pounds of fat at the 350# level.

Table IV, Condition at Freshening

Condition Rating	HEIFERS Fat Lbs.	COWS Fat Lbs.
Excellent	+18	+11
Good	—17	— 1
Fair	—17	—18

4. DAYS WITH CALF DURING LACTATION.—A normal calving interval of 12.5 to 13 months will permit the completion of a 305-day record and allow a dry period of 60 days with a few days to spare. Since the average gestation period in cattle is 280 days, a cow which conceives 85 to 115 days after parturition will calve again at 12.5 to 13 months and will have carried her calf for 190 to 220 days while milking.

As shown in Table V, gestation has very little effect upon production under these circumstances. However, breeding cows too soon after calving will adversely affect the normal lactation curve and annual fat yields. On the other hand, delayed breeding so that the calf is carried for less than 150 days during lactation will result in substantial increases in the milk

and butterfat yields of that lactation period. This can probably be attributed largely to the interaction of the various hormones concerned with lactation and gestation.

Several investigators have pointed out that marked changes in the endocrine balance occur at approximately the end of the fifth month of gestation. Following these changes, the lactation curve drops rather sharply. Thus when the fifth month of gestation comes relatively early in the lactation period, the record is lower. Conversely, delayed breeding postpones this change in hormone relationships until a larger portion of the usual 305-day lactation period has been completed.

Many dairymen are breeding their cows too soon after freshening, believing that this practice will result in higher herd averages. Actually it may lower milk and butterfat production in the herd. This must not be interpreted as a recommendation for late breeding; rather it means rebreeding at 60 to 80 days rather than 40 to 60 days as is often encountered.

Table V, Days in Calf While Milking

Carried Calf	Fat (Lbs.)
50 days or less	+27
50—150 days	+10
Over 250 days	—13

5. TOTAL DIGESTIBLE NUTRIENTS DAILY PER 1000 POUNDS LIVE WEIGHT.—It is, of course, obvious that cows which are underfed will not do as well as they are gentically capable of doing and conversely that normal, healthy cows which are fed liberally under test cow conditions have every opportunity to produce up to the limits of their inheritance. According to Morrison's feeding standards, a 1000 - pound cow giving 30 pounds of 4 per cent milk requires approximately 17.0 pounds of total digestible nutrients daily and, as shown in Table VI at normal levels of feeding, milk production is likewise 'normal.' However, cows which are underfed (12.5—13.0# of TDN) are unable to produce up to their inherited level. Cows fed liberally, on the other hand, may raise their annual fat yield far above the average of cows in general or even of cows in herds which are fed normal rations.

While the figures in Table VI perhaps reveal nothing new, they do provide a quantitative measure of the value of good feeding practices and illustrate the importance of feeding good cows liberally. By the same taken the low producers should be culled promptly.

Table VI, Total Digistible Nutrients Daily Per 1000 Lbs. Live Weight

Manner of Feeding	TDN Daily Lbs.	Fat Lbs.
Underfed	12.5—13.0#	—69
Normal	16.5—17.0#	0
Liberal ration	19.8—21.4#	+60
Heavy ration	24.0—25.0#	+138

To illustrate what might happen in a given herd under various levels of feeding and management, the author has taken Bayley and Heizer's data and arranged them under three different levels of herd management in Table VII. In the example of inferior management, a large herd was assumed, with a dry period for individual cows of only one week, with the cows and heifers freshening in only 'fair' condition and with all animals bred back at 50 days or less. Finally, this herd was assumed to be underfed with a minimum T.D.N. allowance per 1000# live weight.

In the example of normal management, the herd averaged 30 cows which were given a dry period of 60 days and freshened in 'good' to 'excellent' condition. They carried calf while milking 190-220 days and were fed a liberal but not a heavy ration. In the example of superior management, the herd was small—about 15 cows. The dry period lasted 10 weeks and the animals all freshened in 'excellent' condition. The rebreeding was delayed and they were fed a maximum ration without regard to economy of feed.

As will be noted at the bottom of Table VII, under such conditions the inferior herd was penalized approximately 150 pounds of fat to lower the 350-pound basic level of annual butterfat production to approximately 200 pounds. The herd under normal management gained 68 pounds over the assumed 350# level to reach 418 pounds of fat. Finally, the herd under the very best of environmental conditions and management picked up gains totaling 226 pounds of fat to reach a theoretical herd average of 576 pounds.

Table VII, Theoretical Maximum Effects of Superior and Inferior Management Practices on Annual Fat Yields

Management Practice	Inferior	Normal	Superior
1. Herd Size	—24	0	+39
2. Dry Period	—29	+8	+10
3. Condition	—18	0	+11
4. Carried Calf	—12	0	+28
5. T.D.N.	—69	+60	+138
	—152	+68	+226
Basic Prod. Level	350	350	350
Herd Average	198	418	576

In conclusion then, these data illustrate in simple figures the importance of good herd management practices. Large individual records and high herd

averages are not the result of luck and good genes alone but reflect the day to day attention to the many details of feeding and management which fall to the lot of the herdsman who studies his cows, treats them as individuals, keeps accurate records and uses them to raise the level of milk and butterfat production year after year.

Sugar Baits Show Promise for Controlling Flies

Mixtures of sugar and organic phosphate insecticides that can be shaken like salt onto the floors of livestock buildings are showing great promise as a method of controlling flies resistant to such chlorinated hydrocarbon insecticides as DDT, report U.S. Department of Agriculture entomologists.

Three phosphate insecticides—malathion, diazinon, and a dialkyl phosphate material—were tested at the Orlando, Fla., laboratory of USDA's Agricultural Research Service during 1953, and all of them proved effective in controlling DDT-resistant flies. Used in dairy barns and poultry houses, the three chemicals reduced resistant fly populations by 90 per cent or more within four hours after application.

The three phosphates appear to be well-suited for farm use against resistant flies because they are not only the best fly-killers of several chemicals tested, but have relatively low toxicity to livestock and humans.

In practical tests in dairy barns in the Orlando area, the Department entomologists got excellent control of flies by applying the dry bait at the rate of 100 grams (about 3.5 ounces) in each building. They found it necessary to treat five times a week for 2 or 3 weeks to reduce fly populations to a low level in locations where the pests could breed readily. The daily treatments were accomplished in a few minutes with a pint jar fitted with a perforated lid and filled with the sugar-insecticide mixture. Enough insecticide for the entire fly season would cost less than a single residual spray treatment of a typical dairy unit.

In most cases, the dry sugar baits proved more effective than the liquid insecticide baits that were announced by USDA entomologists about a year ago and which are now being used in some areas of the United States.

New Mexico Extension

WEIGH LITTERS AT 21 DAYS

Instead of checking pig weights at the conventional 56 days, use a weigh day with basic facts . . .

Condensed from the Breeder's Gazette

Prof. Malcolm H. Kerr

UNIVERSITY OF MARYLAND

SHOULDN'T we try and get as true a picture of the inherent ability of the sow as a milk producer and mother as it is possible to do?

By weighing the suckling litter at 21 days of age instead of 56 days of age, you would be doing just that. Certainly the sows which are careful mothers and good milk producers have shown their true colors by that time.

Granted that you may have started creep-feeding sugar-coated pellets or milk substitutes at 5 to 7 days of age, the total consumption of these feeds is very small before a 21-day weight would be taken.

Some will raise the objection that this is too early, because occasionally sows go off feed or have milk fever and pigs do not get off to a good start. But if a sow does this it is the feeder's fault; management is to blame, not the breeding of the sow.

I think we all realize that many of these excessive 56-day weaning weights are the result of some system of so-called forced feeding—such as sugar-coated pellets, milk substitutes or just plain whole milk. I know a breeder who fed whole Guernsey milk and a mash or gruel to his pigs from the time they would eat and/or drink until weaning. He averaged over 50 pounds per pig at 56 days of age with a large litter. He kept right on forcing these pigs until they weighed over 200 pounds, and then sold many of them for breeding purposes. He was capitalizing on exceptional weaning records. The prices he asked and received were a trifle exorbitant. The experience of

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most purchasers of these animals was very discouraging. They had not bought proven breeding ability, even though a record had been established.

A 21-day weight would eliminate many, if not all, of these unfortunate experiences. In setting up a 20-day weight we are not just picking an age weight day without any background of experience. Most of our experiment stations have been recording a 21-day weight for years. This date was used because we knew from experience and research that a sow reached her maximum milk producing ability about 21 days after farrowing. She maintains this maximum for a brief time and then gradually drops off in her milk-producing ability.

So, in setting up a Production Registry goal, why not use a weight day for which we already have some basic figures and facts, rather than use a 28- or 35-day period for which we have very few basic figures covering a large number of litters and breeds?

If we want to make a change now, as many breeders feel we should, let us use facts and data which we now have, but keep ever alert to changes for the better which may be available in the future. The setting up of standards for breeds based upon a 21-day weight needs to be looked over by a capable committee of swine men. As a guide let me suggest the following "Qualifications of a Litter in Production Registry."

1. Submit for Production Registry a litter by the 7th day after farrowing, providing there are 8 or more pigs in the litter and they are eligible for registration.
2. No fewer than 8 pigs to be weighed at 21 days of age.
3. If dam is 15 months or under at farrowing time the minimum total weight of litter shall be 88 pounds, with a sliding scale of weights to be used for litters with more than 8 pigs, such as: 10 pigs, 105 lbs.; 12 pigs, 120 lbs.; 14 pigs, 133 lbs.; and 16 pigs, 144 lbs.
4. If dam is over 15 months of age at farrowing time the minimum total litter weight shall be 96 pounds, with a sliding scale of weights to be used for litters with more than 8 pigs, such as: 10 pigs, 115 lbs.; 12 pigs, 132 lbs.; 14 pigs, 147 lbs.; 16 pigs, 160 lbs.

Advantages of Checking Litter Weights at 3 Weeks

The pigs are smaller and much easier to handle.

They may still be confined indoors or, if outside, they would be confined to small areas and only one to four sows would be in a lot with their litters. Pigs could be more easily identified. After this age many more sows in some areas are thrown together in larger lots and some pigs begin to steal from other sows.

Three weeks is also an excellent age to castrate and save an extra handling of the pigs. Up to this 21-day weighing period the pig has not been subjected to any set-back because of vaccination or castration; therefore, you are getting an excellent picture of the sow's ability to raise and suckle a large, uniform litter.

This briefly outlines the Production Registry program. After these goals have been set up and adopted, we need to go further with our swine-testing program. We need to determine the amount of lean or muscling in our breeding stock. This whole program should be based upon economical and profitable gains of the breeding or market hog produced. The housewife and her family desire lean pork chops, bacon, and large lean center slices of ham with a minimum of fat consistent with good quality.

All of our breeds of swine can produce the kind of cuts the housewife will buy readily, but in order to be sure that we producers are raising them, we need a more adequate testing program. To test, slaughter, and measure is the only accurate way of determining the meatiness of a hog. We cannot, by the eye alone, or by any device now being used, judge the meatiness or muscling of a live hog. It must be slaughtered and measured.

These last few comments should open another step forward in the progressive future of our swine business. We need full cooperation from producer, packer, feed manufacturer, the research worker, and guided publicity of the facts as they are worked out.

Corn Cobs Replace Hay

The lowly corn cob can be used to replace part of the hay in dairy cattle rations—when the cows receive high quality corn silage and good alfalfa.

In a test of VPI Agricultural Experiment Station, when ground corn cobs were used to replace one-half of the usual allotment of hay, milk production was maintained satisfactorily. One group of milk cows received 11 pounds of alfalfa hay, 33 pounds of corn silage, and a suitable grain mixture fed according to the level of milk production. Another group received 5½ pounds of alfalfa hay, 5½ pounds of ground corn cobs, 33 pounds of corn silage, and the same grain mixture fed the first group. After a 30-day period the groups were switched so that all cows were on each ration for a 30-day period. Both milk production and body weight remained fairly constant throughout the test.

BEWARE!

The Powder Post Beetle

How to recognize the presence of this destructive insect and latest methods for control. . .

Condensed from The Rural New-Yorker

J. B. Schmitt

SEASONED wood perforated with one-eigth inch holes containing fine wood dust shows evidence that the powder post beetle is either feeding in it now or has fed on it in the past. In old buildings, the infestation may have died out years ago; yet it may still be active. Before spending time and money on the problem, one should acquaint himself with this insect.

Powder post beetles are small, hardshelled insects, rarely more than three-eighths of an inch long; they attack seasoned wood only. The adult female powder post beetle is seldom seen. Before laying her eggs on a piece of wood, she samples it to see if it contains sufficient starch and sugar for the nourishment of her offspring. If a piece of wood is painted, varnished or whitewashed, the female does not approve the wood and so does not lay her eggs there. If wood contains larvae of powder post beetles when it is painted or otherwise coated, the mature beetles will nevertheless make their exit holes through the protective coating. Thus, painting or varnishing may prevent reinfestation, but it does not destroy infestations already in the wood.

Newly-hatched larvae eat their way into the wood, making fine holes detectable only by close scrutiny. They eat through the wood and pass the wood particles through their alimentary canal; they remove the starch and sugar as food. Wood residue is ejected into the tunnel behind the larvae as a fine dry powdery frass; hence the name powder post beetle.

Rate of growth of the larvae

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depends upon the natural growth rate of the particular species involved, and also upon the abundance of food materials in the wood. Under favorable conditions, for our most rapidly growing species, the larva stage lasts four months; under most conditions, several years are ordinarily needed, and periods of seven to 10 years are frequently observed.

Since only the sapwood or outer annual rings in a mature tree contain starch and sugar, powder post larvae restrict their boring to this area. The middle or heartwood is not attacked. Their dependence on sapwood is of great practical importance, especially in powder post beetle problems in old houses.

In most old houses in eastern United States, sills, joists, studs and, in some cases, even rafters were prepared by what was termed four-squaring logs. This operation left an outer layer of sapwood with an inner core of heartwood. Naturally, this sapwood came under severe powder post beetle attack; and it continued until the wood was more or less completely riddled and converted to "powder." The heartwood remained undamaged. Then, with no more food available, the infestation died out. The original shape of the timber (joists, sill, etc.) is often preserved as a thin shell of wood surrounding wood powder, because the larvae do not work closer than one-eighth inch to the outside surface. This shell is, of course, perforated with innumerable exit holes made by emerging adult beetles. Long after the insect infestation has died out, wood powder may fall out of these holes, thus often leading to the erroneous conclusion that insects are active in the wood and that an extensive treatment need be made at once to save the house.

In order to determine whether powder post beetles are active in a house, a simple test should be made. Entirely at random, examine 100 exit holes to see whether any of the holes are fresh. Freshness is indicated by clean sides in the holes, an absence of whitewash, paint or of the wood darkening that comes with exposure. If no fresh holes are found, it may be concluded that no insects are feeding in the wood.

The problem in old houses is more likely to be one of determining whether the remaining heartwood is able to carry the loads placed upon it, than one of destroying insects. Some idea of the amount of sound wood can usually be obtained by thrusting an icepick

into the timber and measuring the depth of penetration.

Powder post beetle attack is common in barns and other farm buildings. Framing timbers showing attack should be covered with paint (either water base or oil), carbolineum, creosote oil, or similar agents to stop reinfestation. Small squared timbers or poles, made by trimming trees up to eight inches in diameter, are often heavily attacked by powder post beetles. Such young trees contain no heartwood and may become completely riddled. Loads imposed on such wood, as in haymows, may come crashing down causing livestock loss or injury and, sometimes, disabling a farmer or his help.

By a process called "cold-soaking," farmers can convert farm-grown posts and poles into permanently-protected wood. A convenient method is to purchase a concentrate solution of pentachlorophenol and dilute it with No. 2 fuel oil to five per cent pentachlorophenol. Any large leak-proof tank or drum can be used. Pealed, seasoned poles and posts should be immersed for 48 hours. Pentachlorophenol is toxic to rot fungi as well as to insects.

Another important powder post beetle problem is infestation of hardwood floors. This condition is commonly encountered in houses only a few years old, and first appears as small holes, one-eighth to one-fourth of an inch in diameter. The home owner should first make sure that the holes ore not those of ambrosia beetles, which cause small pin holes in green lumber by feeding of their larvae.

Orinary kiln seasoning destroys the larvae, but the fine pin hole borings are exposed when the logs are cut into lumber; they are sometimes seen in hardwoods used as flooring. These exposed pin holes resemble the work of powder post beetles, but may be distinguished by the fact the borings reach the surface in a variety of angles, depending upon the plane of sawcut at the mill. In finishing floors, the holes become plugged with wood dust from power sanders. As the floor dries further, these plugs may come out, leave a new hole and so cause alarm.

Careful inspection of the boards near a new hole often discloses other holes, still pluged, and recognizable as a cir cular area. of a different color. Since no living insects are present, no insecticide treatment is needed, but the holes may be refilled to make them less unsightly. If the holes are small,

freshly made, and emerge at right angles to the floor surface it may be assumed that the floor is infested with powder post beetles. Infestation of hardwood floors by powder post beetles commonly occurs sometime prior to the laying of the floor, usually in the warehouse or yard.

Infestation of subflooring by powder post beetles is not a frequent occurrence, and only rarely causes any damage to hardwood flooring. This is not due to any change in food habits, but to efforts of mature larvae to reach the surface before transforming to adults. In most cases any exit holes in subflooring appear on the under surface and it is necessary only to apply paint or varnish to prevent reinfestation. Some kinds of powder post beetles attack the wood of furniture, implement parts and similar items. The evidence of attack, as in the wood of buildings, consists primarily of small round exit holes from which wood dust sifts. The eggs of the insects are deposited only on unfinished, bare wood surfaces; the adults, however, make their exit holes through most varnishes or lacquers. Control of these insects in finished furniture is often a difficult matter.

In refinishing furniture, old finish should be stripped off first. Then the surface should receive several brush coats of pentachlorophenol s o l u t i o.n Manufacturers offer solutions of penta in solvents that do not interfere with r e f i n i s h i n g. Whether the old finish is removed or not, injections of orthodichlorobenzene should be made by inserting the needle of a hypodermic syringe into the exit holes and forcing in as much fluid as possible. A small wad of putty should be pressed and held around the needle at the surface of the hole before pressing on the plunger, and it should be left in place as a seal when the needle is withdrawn. All exit holes should be treated in this manner. Goggles or masks should be worn to avoid injury to the eyes by spurts of liquid. If one cannot get orthodichlorobenzene, a five per cent DDT household spray may be used.

Axe handles, implement parts and similarly turned, but unfinished, articles may become infested. Before working on them strike several sharp blows with the handle to be sure it is still usable, immerse it in an open drum of five per cent pentachlorophenol solution for 48 hours. Burn up useless infested stock. Sand off the outer deposit of pentachlorophenol crystals

just before starting to work with axe handles and manual implements to avoid eye irritation from hand transfer.

A group of insects which make a wood powder like the powder post beetle, but are otherwise harmless, are the bark beetles. These insects work just beneath the bark, and are often active in bark strip on joists, subflooring or furring strips. The condition may be safely ignored, since the feeding cannot spread to lumber lacking bark cover. If the wood dust falling from the bark strip becomes a nuisance, the simplest procedure is to remove the bark with a knife. Grooves and small holes in the wood itself are often exposed in this manner, but are of no importance, since the larvae do not penetrate trate farther than a few annual rings into the wood.

Cattle On Grass Make More Money

Cattlemen may make more money with cattle fattened on grass with a little additional supplementary feed—even though they may never top the market—than with prime finished cattle. The natural way to grow cattle is on pasture, explains Albert Lane, Arizona livestock specialist. Calves that need a lot of growth as well as finish do especially well on pasture.

A cow will eat 100 pounds or more of green forage daily if the pasture is good. She will consume 10 to 15 gallons of water in the same period. With good pasture the cow will be able to spend her time grazing, chewing the cud, and resting in the proper proportion. With poor forage the cow will spend more time grazing, not get enough feed, and not digest the feed she does consume properly. This takes the profit out of the cattleman's pocket.

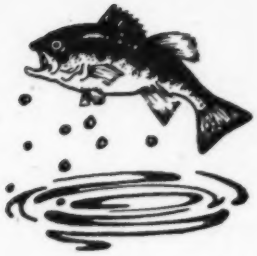
More efficient utilization of the pasture forage can be secured by supplying high quality supplementary feeds. Alfalfa hay, minerals, if they are needed, salt, especially during the last part of the pasturing program, and grain, are the common supplements.

Grain can be gradually added to the ration and a choice carcass may be finished right on pasture. Fattening cattle on pasture usually requires half as much grain or concentrate as you need for strictly dry lot fattening. Experiments have proven that this method can increase gain, finish, dressing percentage, and profit to the operator.

Arizona Farm News

WATER STORAGE WAS GOOD BUSINESS

A single dam brought remarkable results on a California farm



Condensed from Soil Conservation

Herb Boddy, SOIL CONSERVATION SERVICE

IT USED to be that Porter T. Peabody would get a scant ton of cereal hay per acre from one 15-acre dry land field. Now, however, with water from his new dam, he's getting five times as much good forage from the same acreage.

Peabody's farm is near Gilroy, in the Loma Prieta (Calif.) Soil Conservation District. His neighbors know him as a dollar-wise chap, who is not addicted to fads.

Born and raised on the home ranch, Peabody knows the ups and downs of farming through crop years good and bad. He early learned to have faith in the wisdom of good land use. But he also learned that conservation farming requires hard work, year after year.

He says he couldn't get along without the 81 acre-foot water-storage dam he built in the canyon above his ranch house. But for a quarter century or more it was only a dream.

The new dam is why his new pasture is doing so well.

For years Peabody raised fruits, nuts, and livestock with little more than seasonal rains. Cereal grain planting never produced much hay and grazing.

Peabody's search for more feed for his beef cattle and sheep led in 1950 to his sitting down with technician Gene Thomas to talk about dams. They selected a canyon site which was a natural drainage for runoff from the surrounding 460-acre watershed.

By mid-summer—less than a month after work on the fill started—the dam was ready. It measured 60 feet high and 240 feet across at the crest. The average depth of the pond was 36 feet. Today this pond irri-

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gates some 15 acres of pasture, with about 30 acre-feet of water carry-over in dry years.

During the springs of '51 and '52, Peabody seeded 15 acres to the following permanent pasture mixture: perennial ryegrass, 3 pounds; tall fescue, 4 pounds; Ladino clover, 3 pounds; birdsfoot trefoil, 2 pounds, and orchardgrass, 1 pound. To get a good seedbed, he plowed, disced and used a roller-type seeder. He started sprinkler-irrigating with dam water early in May 1951. The new seeding was irrigated 20 times up to mid-October. Last year he cut the frequency of waterings in half.

Peabody didn't apply any commercial fertilizer until last fall when he put on 300 pounds of 16-20-0 per acre. Sheep grazed the lush, one-year-old pasture stand with relish.

The pond has many uses. It not only irrigates a pasture carrying 100 breeding ewes, but also furnishes good fishing for Peabody and his friends.

Farmer Receives 45 Cents of Consumer Dollar

Farmers received 45 cents of every dollar consumers spent on farm products in 1953, according to Riley S. Dougan, Ohio extension economist. Quoting United States Department of Agriculture figures, he said the 45 cents is 2 cents less than 1952 and down 3 cents from the 1951 average. The USDA report is based on an average of prices paid for food in retail grocery stores.

Marketing margins—the dollar-and cents charges for services performed in processing, distribution, and selling of farm products —usually do not shrink with farm prices, Dougan said. Such margins tend to take a larger percentage of the consumer's dollar when farm prices drop.

Marketing costs are based on such things as wages, transportation, rents, taxes, and costs of machinery and facilities used in food handling and processing. They do not respond directly to changing prices for the commodities being handled.

Farm prices, however, are sensitive to changes in supply and demand. They rise suddenly in response to war or defense-created shortages and fall suddenly when demand falls off and surpluses are created. Overall marketing costs are slower to react. But once they have risen in response to wage contracts calling for higher pay schedules, increases in taxes and rents, and higher freight and utility rates, any attempt to lower them meets with resistance.

Ohio Extension Service

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Nitrogen Pays on Corn ..... May 1953
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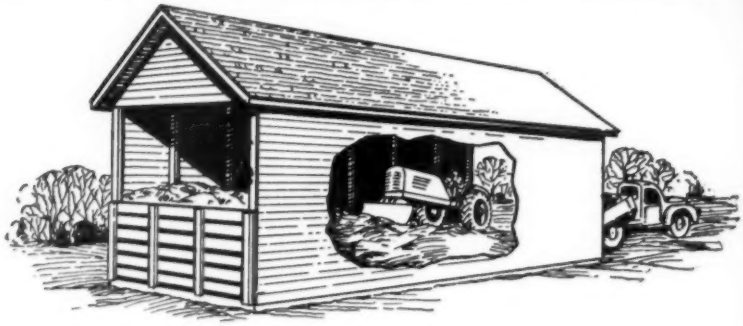

Newest Self-Feeder Silo

Latest thing for storing and feeding grass silage is a shed-like structure that resembles a trench silo built on top of the ground. At Oregon State College, a low-cost silo is eliminating $100 a month labor for "forking" silage to 60 head of cattle. It was built for about one-fourth the cost of an upright silo with comparable capacity of 300 tons.

Designed by Joe B. Johnson, and L. W. Bonnicksen, the pole-frame silo is simply a covered shed 70 x 21 feet, 19 feet high, and open at the ends. Unlike artist's sketch above, poles are on the outside leaving inside walls smooth. Silage is trucked in through the open ends, dumped on the concrete slab floor, and distributed by tractor blade to a height of eight or nine feet.

Open ends are blocked off with movable feed racks that handle 12 animals at a time. The cattle move the rack ahead of them into the silo. Net result—the critters eat their way through the silo and nobody lifts a fork. There has been no spoilage at the ends or sides, only three inches on top. Next year, Johnson plans to top off the stack with hay and bedding that will be used ahead of the moving feed rack.